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A cumulative list of the parts affected this month can be found in the Reader Aids section at the end of this issue.

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Federal Register
Vol. 80, No. 216
Monday, November 9, 2015

OFFICE OF MANAGEMENT AND BUDGET

2 CFR Part 200

Guidance for Reporting and Use of Information Concerning Recipient Integrity and Performance; Corrections

AGENCY: Executive Office of the President, Office of Management and Budget.

ACTION: Correcting amendments.

SUMMARY: The Office of Management and Budget (OMB) is correcting the final guidance that appeared in the **Federal Register** on July 22, 2015 (80 FR 43301). OMB is amending the guidance to make technical corrections where necessary. The final guidance is revised to reflect that due to the 14 day delay of the publically available information entered into the OMB-designated integrity and performance system accessible through SAM (currently the Federal Awardee Performance and Integrity Information System (FAPIIS)), Federal awarding agencies should review the non-public segment of the system when conducting their risk review as described in the guidance. This will ensure that Federal awarding agencies have the most current information available when completing the review.

DATES: *Effective date:* November 9, 2015.

The applicability date of the final guidance remains January 1, 2016.

FOR FURTHER INFORMATION CONTACT: Rhea Hubbard, Office of Federal Financial Management, *rhubbard@omb.eop.gov,* or via telephone at (202) 395–3993.

SUPPLEMENTARY INFORMATION: On July 22, 2015 (80 FR 43301), OMB issued a number of changes to Title 2 of the Code of Federal Regulations (2 CFR part 180 and 2 CFR part 200). These changes provided guidance to Federal agencies to implement Section 872 of the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009. As Section 872 required, OMB and the General Services Administration (GSA) have established an integrity and performance system that includes governmentwide data with specified information related to the integrity and performance of entities awarded Federal grants and contracts. This is the second set of corrections. The first set of corrections was published in the **Federal Register** on July 30, 2015 (80 FR 45395) to advance the effective date to July 30, 2015 and reflect that the applicability date is January 1, 2016. This set of corrections reflects that Federal awarding agencies should check the non-public segment of the OMB-designated integrity and performance system accessible through SAM when conducting their risk review.

List of Subjects in 2 CFR Part 200

Accounting, Auditing, Colleges and universities, State and local governments, Grant programs, Grants administration, Hospitals, Indians, Nonprofit organizations, Reporting and recordkeeping requirements.

Mark Reger,
Deputy Controller.

Under the authority of the Chief Financial Officer Act of 1990 (31 U.S.C. 503), the Office of Management and Budget amends 2 CFR part 200 by making the following correcting amendments:

PART 200—UNIFORM ADMINISTRATIVE REQUIREMENTS, COST PRINCIPLES, AND AUDIT REQUIREMENTS FOR FEDERAL AWARDS

■ 1. The authority citation for part 200 continues to read as follows:

Authority: 31 U.S.C. 503.

§ 200.205 [Amended]

■ 2. Amend § 200.205 paragraph (a)(2) by removing ‘‘publicly available information in’’ and adding, in its place ‘‘non-public segment of’’.

[FR Doc. 2015–28441 Filed 11–6–15; 8:45 am]

BILLING CODE 3110–01–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA–2015–3969; Directorate Identifier 2014–SW–010–AD; Amendment 39–18318; AD 2015–23–02]

RIN 2120–AA64

Airworthiness Directives; Agusta S.p.A. Helicopters

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Final rule; request for comments.

SUMMARY: We are adopting a new airworthiness directive (AD) for Agusta S.p.A. (Agusta) Model AB412 helicopters. This AD requires inspecting the filters installed on the pressure lines of utility hydraulic systems for metal particles. This AD is prompted by a report of a pump failure on the hydraulic external hoist caused by metal particles. These actions are intended to detect metal particles in the filter of the pressure line and prevent the pumps' failure, which could lead to a hoisting accident and injury to persons.

DATES: This AD becomes effective November 24, 2015.

We must receive comments on this AD by January 8, 2016.

ADDRESSES: You may send comments by any of the following methods:

- *Federal eRulemaking Docket:* Go to *http://www.regulations.gov.* Follow the online instructions for sending your comments electronically.
- *Fax:* 202–493–2251.
- *Mail:* Send comments to the U.S. Department of Transportation, Docket Operations, M–30, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE., Washington, DC 20590–0001.
- *Hand Delivery:* Deliver to the ‘‘Mail’’ address between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

Examining the AD Docket

You may examine the AD docket on the Internet at *http://www.regulations.gov* by searching for locating Docket No. FAA–2015–3969 or in person at the Docket Operations Office between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the European Aviation Safety Agency (EASA) AD, and other information. The street address for the Docket Operations Office (telephone 800–647–5527) is in the **ADDRESSES** section. Comments will be available in the AD docket shortly after receipt.

For service information identified in this AD, contact AgustaWestland, Product Support Engineering, Via del Gregge, 100, 21015 Lonate Pozzolo (VA) Italy, ATTN: Maurizio D'Angelo; telephone 39–0331–664757; fax 39–0331–664680; or at *http://www.agustawestland.com/technical-bulletins.* You may review the referenced service information at the FAA, Office of the Regional Counsel, Southwest Region, 10101 Hillwood Pkwy., Room 6N–321, Fort Worth, TX 76177.

FOR FURTHER INFORMATION CONTACT: Matt Wilbanks, Aviation Safety Engineer, Regulations and Policy Group, Rotorcraft Directorate, FAA, 10101 Hillwood Pkwy., Fort Worth, TX 76177; email *matt.wilbanks@faa.gov.*

SUPPLEMENTARY INFORMATION:

Comments Invited

This AD is a final rule that involves requirements affecting flight safety, and we did not provide you with notice and an opportunity to provide your comments prior to it becoming effective. However, we invite you to participate in this rulemaking by submitting written comments, data, or views. We also invite comments relating to the economic, environmental, energy, or federalism impacts that resulted from adopting this AD. The most helpful comments reference a specific portion of the AD, explain the reason for any recommended change, and include supporting data. To ensure the docket does not contain duplicate comments, commenters should send only one copy of written comments, or if comments are filed electronically, commenters should submit them only one time. We will file in the docket all comments that we receive, as well as a report summarizing each substantive public contact with FAA personnel concerning this rulemaking during the comment period. We will consider all the comments we receive and may conduct additional rulemaking based on those comments.

Discussion

EASA, which is the Technical Agent for the Member States of the European Union, issued EASA AD No. 2014–0063–E, dated March 12, 2014, to correct an unsafe condition for Agusta Model AB412 helicopters. EASA advises that during a hoist operation, a pressure line pump part number (P/N) 1–8072 Rev. A failed on a Model AB412 helicopter. Preliminary investigations reveal that unusual wear of an internal subcomponent generated metal particles, which caused the pump to fail, EASA advises. The root cause of this wear has not been determined.

This condition, if not detected and corrected, could lead to future pump failures, resulting in hoisting accidents and injuries. As a result, EASA requires repetitive inspections of the pump's filter for metal particles and replacement of the pressure line pump if particles exist. EASA advises that its AD is an interim action and that further AD action may follow, depending on the outcome of the investigations.

FAA's Determination

These helicopters have been approved by the aviation authority of Italy and are approved for operation in the United States. Pursuant to our bilateral agreement with Italy, EASA, its technical representative, has notified us of the unsafe condition described in the EASA AD. We are issuing this AD because we evaluated all information provided by EASA and determined the unsafe condition exists and is likely to exist or develop on other helicopters of these same type designs.

Related Service Information

AgustaWestland has issued Bollettino Tecnico No. 412–140, dated March 11, 2014 (BT), for Model AB412 helicopters with a hydraulic external hoist P/N BL10300–60 installed. The BT notes that Agusta received a report that pump P/N 1–8072 Rev. A failed during a hoist operation on a Model AB412 helicopter due to metal particles generated by unusual wear of an internal subcomponent. The BT calls for inspecting the filter installed on the external hoist's pressure line for metal particles. The BT notes that an investigation is underway to determine the failure's root causes and that the BT could be updated.

AD Requirements

This AD requires, within 10 hours time-in-service (TIS) and thereafter at intervals not to exceed 25 hours TIS, inspecting to determine whether metal particles are in the filter installed on the pressure line of the utility hydraulic system. If there are any metal particles, this AD requires, before the next flight, flushing the utility hydraulic system, replacing the filter with an airworthy filter, and replacing the pressure line pump with an airworthy pressure line pump.

Interim Action

We consider this AD to be an interim action. The design approval holder is investigating the root cause for the unsafe condition identified in this AD. Once the investigation is completed, we might consider additional rulemaking.

Costs of Compliance

There are no costs of compliance with this AD because there are no helicopters with this type certificate on the U.S. Registry.

FAA's Justification and Determination of the Effective Date

There are no helicopters with this type certificate are on the U.S. Registry. Therefore, we believe it is unlikely that we will receive any adverse comments or useful information about this AD from U.S. Operators.

Since an unsafe condition exists that requires the immediate adoption of this AD, we determined that notice and opportunity for public comment before issuing this AD are unnecessary because there are none of these helicopters on the U.S. Registry and that good cause exists for making this amendment effective in less than 30 days.

Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. ''Subtitle VII: Aviation Programs,'' describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in ''Subtitle VII, Part A, Subpart III, Section 44701: General requirements.'' Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

We determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed, I certify that this AD:

1. Is not a ''significant regulatory action'' under Executive Order 12866;

2. Is not a ''significant rule'' under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979);

3. Will not affect intrastate aviation in Alaska to the extent that it justifies making a regulatory distinction; and

4. Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

PART 39—AIRWORTHINESS DIRECTIVES

■ 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

■ 2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

2015–23–02 Agusta S.p.A.: Amendment 39–18318; Docket No. FAA–2015–3969; Directorate Identifier 2014–SW–010–AD.

(a) Applicability

This AD applies to Model AB412 helicopters with a hydraulic external hoist part number BL10300–60 installed, certificated in any category.

(b) Unsafe Condition

This AD defines the unsafe condition as failure of a hydraulic external hoist pressure line pump. This condition, if not detected and prevented, could result in loss of hydraulic pressure and subsequent injury to persons being lifted in the hoist.

(c) Effective Date

This AD becomes effective November 24, 2015.

(d) Compliance

You are responsible for performing each action required by this AD within the specified compliance time unless it has already been accomplished prior to that time.

(e) Required Actions

Within 10 hours time-in-service (TIS) and thereafter at intervals not to exceed 25 hours TIS:

(1) Inspect the hydraulic external hoist pressure line filter for metal particles.

(2) If there are any metal particles, before further flight, flush the utility hydraulic system, replace the pressure line pump, and replace the filter.

(f) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Safety Management Group, FAA, may approve AMOCs for this AD. Send your proposal to: Matt Wilbanks, Aviation Safety Engineer, Regulations and Policy Group, Rotorcraft Directorate, FAA, 10101 Hillwood Pkwy., Fort Worth, TX 76177; email *9-asw-ftw-amoc-requests@faa.gov.*

(2) For operations conducted under a 14 CFR part 119 operating certificate or under 14 CFR part 91, subpart K, we suggest that you notify your principal inspector, or lacking a principal inspector, the manager of the local flight standards district office or certificate holding district office, before operating any aircraft complying with this AD through an AMOC.

(g) Additional Information

(1) AgustaWestland Bollettino Tecnico No. 412–140, dated March 11, 2014, which is not incorporated by reference, contains additional information about the subject of this AD. For service information identified in this AD, contact AgustaWestland, Product Support Engineering, Via del Gregge, 100, 21015 Lonate Pozzolo (VA) Italy, ATTN: Maurizio D'Angelo; telephone 39–0331–664757; fax 39–0331–664680; or at *http://www.agustawestland.com/technical-bulletins.* You may review a copy of the service information at the FAA, Office of the Regional Counsel, Southwest Region, 10101 Hillwood Pkwy., Room 6N–321, Fort Worth, TX 76177.

(2) The subject of this AD is addressed in European Aviation Safety Agency (EASA) AD No. 2014–0063–E, dated March 12, 2014. You may view the EASA AD on the Internet at *http://www.regulations.gov* by searching for and locating it in Docket No. FAA–2015–3969.

(h) Subject

Joint Aircraft Service Component (JASC) Code: 2550, Cargo Compartments.

Issued in Fort Worth, Texas, on October 30, 2015.

James A. Grigg,

Acting Assistant Manager, Rotorcraft Directorate, Aircraft Certification Service.

[FR Doc. 2015–28314 Filed 11–6–15; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA–2015–3224; Directorate Identifier 2015–CE–026–AD; Amendment 39–18290; AD 2015–20–11]

RIN 2120–AA64

Airworthiness Directives; Schempp-Hirth Flugzeugbau GmbH Gliders

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule; correction.

SUMMARY: The FAA is correcting an airworthiness directive (AD) that published in the **Federal Register**. That AD applies to certain Schempp-Hirth Flugzeugbau GmbH Models Duo Discus and Duo Discus T gliders. The Model Duo Discus gliders were incorrectly referenced as powered sailplanes in the Applicability section. This document corrects that error and refers to both models as just gliders as in previous ADs. In all other respects, the original document remains the same; however we are publishing the entire rule in the **Federal Register**.

DATES: This final rule is effective November 18, 2015.

ADDRESSES: You may examine the AD docket on the Internet at *http://www.regulations.gov* by searching for and locating Docket No. FAA–2015–3224; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The address for the Docket Office (phone: 800–647–5527) is Document Management Facility, U.S. Department of Transportation, Docket Operations, M–30, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE., Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: Jim Rutherford, Aerospace Engineer, FAA, Small Airplane Directorate, 901 Locust, Room 301, Kansas City, Missouri 64106; telephone: (816) 329–4165; fax: (816) 329–4090; email: *jim.rutherford@faa.gov.*

SUPPLEMENTARY INFORMATION: Airworthiness Directive 2015–20–11, Amendment 39–18290 (80 FR 61722, October 14, 2015), currently requires inspecting and replacing the airbrake bell crank and the airbrake drive funnels and inspecting the airbrake control system for proper clearance and making necessary adjustments.

As published, the Model Duo Discus gliders were incorrectly referenced as powered sailplanes in the Applicability section. This could cause confusion because the Model Duo Discus does not have an engine. This document corrects that error and refers to both models as just gliders as in previous ADs.

Although no other part of the preamble or regulatory information has been corrected, we are publishing the entire rule in the **Federal Register**.

The effective date of this AD remains November 18, 2015.

PART 39—AIRWORTHINESS DIRECTIVES

■ 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

■ 2. The FAA amends § 39.13 by adding the following new AD:

2015–20–11 Schempp-Hirth Flugzeugbau GmbH: Amendment 39–18290; Docket No. FAA–2015–3224; Directorate Identifier 2015–CE–026–AD.

(a) Effective Date

This airworthiness directive (AD) becomes effective on November 18, 2015.

(b) Affected ADs

None.

(c) Applicability

This AD applies to Schempp-Hirth Flugzeugbau GmbH Model Duo Discus gliders, serial numbers 1 through 639, and Model Duo Discus T gliders, serial numbers 1 through 110 and 112 through 247, certificated in any category.

(d) Subject

Air Transport Association of America (ATA) Code 27: Flight Controls.

(e) Reason

This AD was prompted by mandatory continuing airworthiness information (MCAI) originated by an aviation authority of another country to identify and correct an unsafe condition on an aviation product. The MCAI describes the unsafe condition as excessive load on the air brake system. We are issuing this AD to prevent uncontrolled actuation of the air brakes (symmetric or asymmetric), which could result in reduced control.

(f) Actions and Compliance

Unless already done, do the actions in paragraph (f)(1) through (f)(5) of this AD.

(1) Within 40 days after November 18, 2015 (the effective date of this AD) and repetitively thereafter at intervals not to exceed 100 hours time-in-service until the terminating replacement action required in paragraphs (f)(2) and (f)(3) of this AD (as applicable) is done, inspect the airbrake bell crank, the airbrake drive funnels, and the airbrake control system.

(i) Inspect the airbrake bell crank and the airbrake drive funnels for cracks and damage following Action 1 in Schempp-Hirth Flugzeugbau GmbH Technical Note No. 380 –2/396–17/868–22/890–14, Revision 1, issued July 13, 2015 (published as a single document).

(ii) Inspect the airbrake control system for proper clearance following Paragraph 2.d. of Schempp-Hirth Flugzeugbau GmbH Working instruction for Technical Note No. 380–2/396–17/868–22/890–14, Ausgabe (English translation: issue) 1, Datum (English translation: dated) May 11, 2015.

(2) If cracks or damage is found on the airbrake bell cranks or the airbrake drive funnels during any inspection required in paragraph (f)(1) of this AD, before further flight, replace each cracked or damaged part with a reinforced part. Installing a reinforced part terminates the repetitive inspections required in paragraph (f)(1) of this AD for that part.

(i) For replacement of the airbrake bell cranks, follow Picture 2: Reinforced version of airbrake bell crank according to HS 11–50.016, Revision a or later, in Schempp-Hirth Flugzeugbau GmbH Working instruction for Technical Note No. 380–2/396–17/868–22/890–14, Ausgabe (English translation: issue) 1, Datum (English translation: dated) May 11, 2015.

(ii) For replacement of the airbrake drive funnels, follow Picture 5: Airbrake drive funnel in fuselage ''Reinforcement of airbrake drive funnel according to drawing S14RB703, Revision a, in Schempp-Hirth Flugzeugbau GmbH Working instruction for Technical Note No. 380–2/396–17/868–22/890–14, Ausgabe (English translation: issue) 1, Datum (English translation: dated) May 11, 2015.

(3) If no cracks or damage were found on the airbrake bell cranks or the airbrake drive funnels during any inspection required in paragraph (f)(1) of this AD, within 12 months after November 18, 2015 (the effective date of this AD), replace each of the airbrake bell cranks and airbrake drive funnels with a reinforced part. These replacements terminate the repetitive inspections required in paragraph (f)(1) of this AD.

(i) For replacement of the airbrake bell cranks, follow Picture 2: Reinforced version of airbrake bell crank according to HS 11–50.016, Revision a or later, in Schempp-Hirth Flugzeugbau GmbH Working instruction for Technical Note No. 380–2/396–17/868–22/890–14, Ausgabe (English translation: issue) 1, Datum (English translation: dated) May 11, 2015.

(ii) For replacement of the airbrake drive funnels, follow Picture 5: Airbrake drive funnel in fuselage, ''Reinforcement of airbrake drive funnel according to drawing S14RB703, Revision a,'' in Schempp-Hirth Flugzeugbau GmbH Working instruction for Technical Note No. 380–2/396–17/868–22/890–14, Ausgabe (English translation: issue) 1, Datum (English translation: dated) May 11, 2015.

(4) If the airbrake control system is found to not have proper clearance during the inspection required in paragraph (f)(1) of this AD, before further flight, make all necessary corrective adjustments following Paragraph 2.d. of Schempp-Hirth Flugzeugbau GmbH Working instruction for Technical Note No. 380–2/396–17/868–22/890–14, Ausgabe (English translation: issue) 1, Datum (English translation: dated) May 11, 2015.

(5) As of November 18, 2015 (the effective date of this AD), only install an airbrake bell crank or an airbrake drive funnel that corresponds to Picture 2: Reinforced version of airbrake bell crank according to HS 11–50.016, Revision a or later, and Picture 5: Airbrake drive funnel in fuselage, ''Reinforcement of airbrake drive funnel according to drawing S14RB703, Revision a,'' in Schempp-Hirth Flugzeugbau GmbH Working instruction for Technical Note No. 380–2/396–17/868–22/890–14, Ausgabe (English translation: issue) 1, Datum (English translation: dated) May 11, 2015, as applicable.

(g) Other FAA AD Provisions

The following provisions also apply to this AD:

(1) *Alternative Methods of Compliance (AMOCs):* The Manager, Standards Office, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. Send information to ATTN: Jim Rutherford, Aerospace Engineer, FAA, Small Airplane Directorate, 901 Locust, Room 301, Kansas City, Missouri 64106; telephone: (816) 329–4165; fax: (816) 329–4090; email: *jim.rutherford@faa.gov.* Before using any approved AMOC on any glider to which the AMOC applies, notify your appropriate principal inspector (PI) in the FAA Flight Standards District Office (FSDO), or lacking a PI, your local FSDO.

(2) *Airworthy Product:* For any requirement in this AD to obtain corrective actions from a manufacturer or other source, use these actions if they are FAA-approved. Corrective actions are considered FAA-approved if they are approved by the State of Design Authority (or their delegated agent). You are required to assure the product is airworthy before it is returned to service.

(h) Related Information

Refer to MCAI European Aviation Safety Agency (EASA) AD No. 2015–0139R1, dated July 15, 2015, for related information. You may examine the MCAI on the Internet at *http://www.regulations.gov/#!documentDetail;D=FAA-2015-3224-0002.*

(i) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Schempp-Hirth Flugzeugbau GmbH Technical Note No. 380 –2/396–17/868–22/890–14, Revision 1, issued July 13, 2015 (published as a single document).

(ii) Schempp-Hirth Flugzeugbau GmbH Working instruction for Technical Note No. 380–2/396–17/868–22/890–14, Ausgabe (English translation: issue) 1, Datum (English translation: dated) May 11, 2015.

(3) For Schempp-Hirth Flugzeugbau GmbH service information identified in this AD, contact Schempp-Hirth Flugzeugbau GmbH,

Krebenstrasse 25, 73230 Kirchheim/Teck, Germany; telephone: +49 7021 7298–0; fax: +49 7021 7298–199; email: *info@schempp-hirth.com;* Internet: *http://www.schempp-hirth.com.*

(4) You may view this service information at the FAA, Small Airplane Directorate, 901 Locust, Kansas City, Missouri 64106. For information on the availability of this material at the FAA, call (816) 329–4148. In addition, you can access this service information on the Internet at *http://www.regulations.gov* by searching for and locating Docket No. FAA–2015–3224.

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal-register/cfr/ibr-locations.html.*

Issued in Kansas City, Missouri, on November 2, 2015.

Melvin Johnson,

Acting Manager, Small Airplane Directorate, Aircraft Certification Service.

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DEPARTMENT OF LABOR

Occupational Safety and Health Administration

29 CFR Part 1982

[Docket Number: OSHA–2008–0027]

RIN 1218–AC36

Procedures for the Handling of Retaliation Complaints Under the National Transit Systems Security Act and the Federal Railroad Safety Act

AGENCY: Occupational Safety and Health Administration, Labor.

ACTION: Final rule.

SUMMARY: This document provides the final text of regulations governing the employee protection provisions of the National Transit Systems Security Act (NTSSA), enacted as Section 1413 of the Implementing Recommendations of the 9/11 Commission Act of 2007 (9/11 Commission Act), and the Federal Railroad Safety Act (FRSA), as amended by Section 1521 of the 9/11 Commission Act. The 9/11 Commission Act was enacted into law on August 3, 2007. FRSA was amended further in 2008. An interim final rule establishing procedures for these provisions and a request for public comment was published in the **Federal Register** on August 31, 2010. Ten comments were received. This rule responds to those comments and establishes the final procedures and time frames for the handling of retaliation complaints under NTSSA and FRSA, including procedures and time frames for employee complaints to the Occupational Safety and Health Administration (OSHA), investigations by OSHA, appeals of OSHA determinations to an administrative law judge (ALJ) for a hearing de novo, hearings by ALJs, review of ALJ decisions by the Administrative Review Board (ARB) (acting on behalf of the Secretary of Labor), and judicial review of the Secretary of Labor's final decision.

DATES: This final rule is effective on November 9, 2015.

FOR FURTHER INFORMATION CONTACT: Rob Swick, Directorate of Whistleblower Protection Programs, Occupational Safety and Health Administration, U.S. Department of Labor, Room N–4618, 200 Constitution Avenue NW., Washington, DC 20210; telephone (202) 693–2199 (this is not a toll-free number); email *OSHA.DWPP@dol.gov.* This **Federal Register** document is available in alternative formats. The alternative formats available are large print, electronic file on computer disk (Word Perfect, ASCII, Mates with Duxbury Braille System) and audiotape.

SUPPLEMENTARY INFORMATION:

I. Background

NTSSA, which was enacted by the 9/11 Commission Act, establishes employee protection provisions for public transportation agency employees who engage in whistleblowing activities pertaining to public transportation safety or security (or, in circumstances covered by the statute, employees perceived to have engaged or to be about to engage in protected activity). *See* Public Law 110–53, Title XIV, § 1413, 121 Stat. 414 (2007) (NTSSA, codified at 6 U.S.C. 1142).

FRSA, which was amended by the 9/11 Commission Act, establishes employee protection provisions for railroad carrier employees who engage in whistleblowing activities pertaining to railroad safety or security (or, in circumstances covered by the statute, employees perceived to have engaged or to be about to engage in protected activity). Public Law 110–53, Title XV, § 1521, 121 Stat. 444 (2007) (FRSA, codified at 49 U.S.C. 20109). FRSA, as further amended in 2008, establishes whistleblower provisions for railroad carrier employees who are retaliated against for requesting medical or first aid treatment, or for following orders or a treatment plan of a treating physician. *See* Public Law 110–432, Div. A, Title IV, § 419, 122 Stat. 4892 (Oct. 16, 2008) (FRSA, codified at 49 U.S.C. 20109(c)(2)). The 2008 FRSA amendments also prohibit railroad carriers and other covered persons from denying, delaying, or interfering with the medical or first aid treatment of an employee, and require that an injured employee be promptly transported to the nearest hospital upon request. 49 U.S.C. 20109(c)(1). These rules establish final procedures for the handling of whistleblower complaints under NTSSA and FRSA.

II. Summary of Statutory Procedures

Prior to the 9/11 Commission Act amendment of FRSA, whistleblower retaliation complaints by railroad carrier employees were subject to mandatory dispute resolution pursuant to the Railway Labor Act (45 U.S.C. 151 *et seq.*), which included whistleblower proceedings before the National Railroad Adjustment Board, as well as other dispute resolution procedures. The amendment changed the procedures for resolution of such complaints and transferred the authority to implement the whistleblower provisions for railroad carrier employees to the Secretary of Labor (Secretary).

The procedures for filing and adjudicating whistleblower complaints under NTSSA and FRSA, as amended, are generally the same.[1] FRSA provides that the rules and procedures set forth in the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR 21), 49 U.S.C. 42121(b), govern in FRSA actions, 49 U.S.C. 20109(d)(2). AIR 21's rules and procedures are very similar to the procedures provided in NTSSA, 6 U.S.C. 1142(c). The NTSSA and FRSA whistleblower provisions include procedures that allow a covered employee to file, within 180 days of the alleged retaliation, a complaint with the Secretary. Upon receipt of the complaint, the Secretary must provide written notice to the person or persons named in the complaint alleged to have violated NTSSA or FRSA (respondent) of the filing of the complaint, the

[1] The regulatory provisions in this part have been written and organized to be consistent with other whistleblower regulations promulgated by OSHA to the extent possible within the bounds of the statutory language of NTSSA and FRSA. Responsibility for receiving and investigating complaints under NTSSA and FRSA has been delegated to the Assistant Secretary for Occupational Safety and Health. Secretary's Order 01–2012 (Jan. 18, 2012), 77 FR 3912 (Jan. 25, 2012). Hearings on determinations by the Assistant Secretary are conducted by the Office of Administrative Law Judges, and appeals from decisions by ALJs are decided by the ARB. Secretary of Labor's Order No. 2–2012 (Oct. 19, 2012), 77 FR 69378 (Nov. 16, 2012).

allegations contained in the complaint, the substance of the evidence supporting the complaint, and the rights afforded the respondent during the investigation. The Secretary must then, within 60 days of receipt of the complaint, afford the respondent an opportunity to submit a response and meet with the investigator to present statements from witnesses, and conduct an investigation.

The Secretary may conduct an investigation only if the complainant has made a prima facie showing that the protected activity was a contributing factor in the adverse action alleged in the complaint and the respondent has not demonstrated, through clear and convincing evidence, that the employer would have taken the same adverse action in the absence of that activity. Under OSHA's procedures, a complainant may meet this burden through the complaint supplemented by interviews of the complainant.

After investigating a complaint, the Secretary will issue written findings. If, as a result of the investigation, the Secretary finds there is reasonable cause to believe that retaliation has occurred, the Secretary must notify the respondent of those findings, along with a preliminary order which includes the relief available under FRSA or NTSSA as applicable, including: An order that the respondent abate the violation; reinstatement with the same seniority status that the employee would have had but for the retaliation; back pay with interest; and compensatory damages, including compensation for any special damages sustained as a result of the discrimination, including litigation costs, expert witness fees, and reasonable attorney fees. The preliminary order may also require payment of punitive damages up to $250,000.

The complainant and the respondent then have 30 days after receipt of the Secretary's notification in which to file objections to the findings and/or preliminary order and request a hearing before an ALJ. The filing of objections under NTSSA or FRSA will stay any remedy in the preliminary order except for preliminary reinstatement. If a hearing before an ALJ is not requested within 30 days, the preliminary order becomes final and is not subject to judicial review.

If a hearing is held, NTSSA and FRSA require the hearing to be conducted ''expeditiously.'' The Secretary then has 120 days after the conclusion of a hearing in which to issue a final order, which may provide the relief authorized by the statute or deny the complaint. Until the Secretary's final order is issued, the Secretary, the complainant, and the respondent may enter into a settlement agreement that terminates the proceeding. Under NTSSA, the Secretary also may award a prevailing employer reasonable attorney fees, not exceeding $1,000, if the Secretary finds that the complaint is frivolous or has been brought in bad faith.

Within 60 days of the issuance of the final order, any person adversely affected or aggrieved by the Secretary's final order may file an appeal with the United States Court of Appeals for the circuit in which the violation occurred or the circuit where the complainant resided on the date of the violation.

NTSSA and FRSA permit the employee to seek de novo review of the complaint by a United States district court in the event that the Secretary has not issued a final decision within 210 days after the filing of the complaint, and there is no showing that the delay is due to the bad faith of the complainant. The court will have jurisdiction over the action without regard to the amount in controversy and the case will be tried before a jury at the request of either party. The whistleblower provisions of NTSSA and FRSA each provide that an employee may not seek protection under those respective provisions and another provision of law for the same allegedly unlawful act of the public transportation agency (under NTSSA) or railroad carrier (under FRSA). 6 U.S.C. 1142(e); 49 U.S.C. 20109(f). The whistleblower provisions of NTSSA and FRSA also provide that nothing in their respective provisions preempts or diminishes any other safeguards against discrimination, demotion, discharge, suspension, threats, harassment, reprimand, retaliation, or any other manner of discrimination provided by Federal or State law. 6 U.S.C. 1142(f); 49 U.S.C. 20109(g). The whistleblower provisions of NTSSA and FRSA further provide that nothing in their respective provisions shall be construed to diminish the rights, privileges, or remedies of any employee under any Federal or State law or under any collective bargaining agreement and that the rights and remedies in the whistleblower provisions of NTSSA or FRSA may not be waived by any agreement, policy, form, or condition of employment. 6 U.S.C. 1142(g); 49 U.S.C. 20109(h).

III. Summary and Discussion of Rulemaking Proceedings and Regulatory Provisions

On August 31, 2010, OSHA published in the **Federal Register** an interim final rule, promulgating rules governing the employee protection provisions of NTSSA and FRSA. 75 FR 53522. In addition to promulgating the interim final rule, OSHA's notice included a request for public comment on the interim rules by November 1, 2010.

In response, several organizations and individuals filed comments with the agency within the public comment period. Comments were received from the National Whistleblower Center (NWC); the Government Accountability Project (GAP); nine railroad labor organizations (collectively Rail Labor) that submitted one collective set of comments; the AFL–CIO Transportation Trades Department, which represents 32 unions; the Utah Transit Authority FrontRunner Commuter Rail; the American Public Transportation Association; the American Shortline and Regional Railroad Association (ASLRRA); the Association of American Railroads (AAR); Charles Goetsch; and Todd Miller.

OSHA has reviewed and considered the comments and now adopts this final rule, which has been revised in part in response to the comments. The following discussion addresses the comments and OSHA's responses in the order of the provisions of the rule.

General Comments

Comments Regarding the Treatment of Complaints Under Section 20109(c)(1)

In the preamble to the interim final rule, OSHA stated that the procedural rules provided in this part would not apply to complaints under paragraph 20109(c)(1) of FRSA. That paragraph provides:

> A railroad carrier or person covered under this section may not deny, delay, or interfere with the medical or first aid treatment of an employee who is injured during the course of employment. If transportation to a hospital is requested by an employee who is injured during the course of employment, the railroad shall promptly arrange to have the injured employee transported to the nearest hospital where the employee can receive safe and appropriate medical care.

OSHA stated that section 20109(c)(1) is not a whistleblower provision because it appears to prohibit certain conduct by railroad carriers irrespective of any protected activity by an employee. 75 FR at 53522. Rail Labor, the AFL–CIO Transportation Trades Department, and Charles Goetsch all disagreed and urged the Secretary to apply the procedures in this part to complaints under section 20109(c)(1). These commenters noted that section 20109(d) of FRSA gives the Secretary the authority and duty to enforce the statute when an employee alleges ''discharge, discipline, or other discrimination in violation of subsection (a), (b), or (c)[.]'' 49 U.S.C. 20109(d). They noted that the legislative history shows that the prompt medical attention provision was originally drafted as a stand-alone provision, but was transferred to section 20109, which is the only section in FRSA not assigned to the Federal Railroad Administration (FRA). Therefore, they concluded, enforcement of section 20109, including paragraph (c)(1), is assigned to the Secretary. They further asserted that ''other discrimination'' in section 20109(d)(1) encompasses the denial, delay, or interference with medical treatment prohibited in paragraph (c)(1), and that ''other discrimination'' is not limited to situations involving protected activity. Consequently, according to these commenters, any denial or infringement of the right under paragraph (c)(1) to prompt medical attention constitutes *per se* discrimination. They also argued that it is wrong to assume that paragraph (c)(1) involves no protected activity. The prohibited conduct in paragraph (c)(1) (*i.e.,* the denial, delay, or interference) only occurs if an employee has requested medical treatment. In other words, the commenters suggest that an employee has to have requested medical treatment for that treatment to be denied, delayed, or interfered with. Thus, they maintained, the protected activity under paragraph (c)(1) is requesting medical treatment. Lastly, they argued that it would be illogical to prohibit a railroad carrier from disciplining an employee for requesting medical treatment as paragraph (c)(2) does, but not to prohibit the railroad carrier from denying, delaying, or interfering with that medical treatment. Treating paragraph (c)(1) as if it were not a whistleblower provision would, they claimed, permit a railroad carrier to use the denial, delay, or interference with an employee's medical treatment as the means of retaliating against the employee rather than having to discipline the employee, which would violate paragraph (c)(2). They urged OSHA to reconsider its position and to process paragraph (c)(1) complaints under the procedures applicable to all other complaints arising under 49 U.S.C. 20109.

Apart from these comments on paragraph (c)(1), the ARB set out its interpretation of paragraph (c)(1) in *Santiago* v. *Metro-North Commuter R.R. Co., Inc.,* ARB No. 10–147, 2012 WL 3164360 (ARB June 12, 2015), *pet. for review filed, Santiago* v. *U.S. Dep't of Labor,* Case No. 15–2551 (2d Cir. Aug. 13, 2015). The ARB treated a complaint under paragraph (c)(1) as a whistleblower claim subject to the same procedures and burdens of proof as a claim under paragraphs (a) or (b). *See id.* at *5. The ARB reasoned that paragraph (c) implicitly identifies protected activity as requesting or receiving medical treatment or complying with treatment plans for work injuries, and identifies the prohibited discrimination as delaying, denying, or interfering, or imposing or threatening to impose discipline. *See id.* The ARB further reasoned that AIR 21's procedural burdens of proof govern claims under paragraph (c), but must be tailored to apply to the processing of such claims. *See id.* at *6. The ARB also outlined how the burdens of proof would apply to complaints under paragraph (c)(1). *See id.* at *10–12. Because FRSA grants to the Secretary the authority to enforce and adjudicate FRSA claims, 49 U.S.C. 20109(c), and because the Secretary has delegated his adjudicative authority under FRSA to the ARB, Secretary of Labor's Order No. 2–2012 (Oct. 19, 2012), 77 FR 69378 (Nov. 16, 2012), the ARB's decision in *Santiago* constitutes the Secretary's interpretation of paragraph (c).

Based on the statutory text, the legislative history of paragraph (c)(1), and the ARB's decision in *Santiago* outlined above, the procedures provided in 49 U.S.C. 20109(d) apply to complaints alleging violations of paragraph (c)(1). The language and structure of the statute, together with the legislative history, show that FRSA provides employees the ability to file complaints regarding violations of paragraph (c)(1) with the Secretary and recover the remedies listed in section 20109(e) in the event of a violation.

Paragraph (d)(1) states that ''[a]n employee who alleges discharge, discipline or other discrimination in violation of subsection (a), (b), or (c) of this section, may seek relief in accordance with the provisions of this section, with any petition or other request for relief under this section to be initiated by filing a complaint with the [Secretary].'' 49 U.S.C. 20109(d)(1). The plain language of paragraph (d)(1) does not distinguish between complaints alleging violations of paragraph (c)(1) or (c)(2) in prescribing the treatment of complaints, but rather broadly applies to ''*any* petition or request for relief under this section.'' (Emphasis added.) Further, no other provision in 49 U.S.C. 20109 contains an alternative mechanism for adjudication of complaints under paragraph (c)(1). Therefore, the ''other discrimination'' for which an employee may seek relief under paragraph (d)(1) necessarily includes a denial, delay, or interference with medical or first aid treatment, or failing to promptly transport an injured employee to the nearest hospital upon the employee's request. *See Delgado* v. *Union Pacific R.R. Co.,* 12 C 2596, 2012 WL 4854588, at *3 (N.D. Ill.) (''[T]he obstruction of an injured employee seeking medical attention is itself discrimination against an employee and therefore provides a basis for private enforcement under subsection (d)(1).'').

The legislative history also supports the conclusion that the Secretary has the authority to enforce paragraph (c)(1) and that the procedures outlined elsewhere in section 20109 also apply to complaints alleging violations of paragraph (c)(1). As the commenters and the ARB in *Santiago* noted, Congress originally proposed to prohibit the denial, delay, or interference with medical or first aid treatment in a freestanding section of FRSA, over which the Secretary of Labor would not have enforcement authority, but made a conscious decision to move that prohibition to paragraph (c)(1) of section 20109. *See* Federal Railroad Safety Improvement Act of 2007, H.R. 2095, 110th Cong. Title VI, § 606 (2007) (proposed bill, which would have included the provision at 49 U.S.C. 20162); Rail Safety Improvement Act of 2008, H.R. Res. 1492 110th Cong. § 419 (2008) (reconciling H.R. 2095 with Senate amendments and moving the prohibition on the denial, delay, or interference with medical or first aid treatment from section 20162 to section 20109). Moving the provision to section 20109 indicates that Congress intended employees to have the same right to file a complaint with the Secretary of Labor seeking damages and other remedies following an unlawful denial, delay or interference with medical or first aid treatment that employees have for other violations of section 20109. *Santiago,* 2012 WL 3255136, at *9 (describing this history as ''a progressive expansion of anti-retaliation measures in an effort to address continuing concerns about railroad safety and injury reporting''). For all of these reasons, and in light of the ARB's decision in *Santiago,* the procedures established in 29 CFR part 1982 apply to complaints alleging violations of 49 U.S.C. 20109(c)(1), and OSHA has accordingly revised sections 1982.100 and 1982.102 to reflect this protection.

Comments Regarding the Proper Interpretation of the Election of Remedies, No Preemption, and Rights Retained by Employees Provisions

The whistleblower provisions of NTSSA and FRSA each provide that an employee may not seek protection under those respective provisions and another provision of law for the same allegedly unlawful act of the public transportation agency (under NTSSA) or railroad carrier (under FRSA). 6 U.S.C. 1142(e); 49 U.S.C. 20109(f). The whistleblower provisions of NTSSA and FRSA also provide that nothing in those respective provisions preempts or diminishes any other safeguards against discrimination, demotion, discharge, suspension, threats, harassment, reprimand, retaliation, or any other manner of discrimination provided by Federal or State law. 6 U.S.C. 1142(f); 49 U.S.C. 20109(g). The whistleblower provisions of NTSSA and FRSA further provide that nothing in those respective provisions shall be construed to diminish the rights, privileges, or remedies of any employee under any Federal or State law or under any collective bargaining agreement and that the rights and remedies in the whistleblower provisions of NTSSA or FRSA may not be waived by any agreement, policy, form, or condition of employment. 6 U.S.C. 1142(g); 49 U.S.C. 20109(h).

Several commenters addressed the provisions in FRSA regarding election of remedies, no preemption, and rights retained by employees, 49 U.S.C. 20109(f), (g), and (h). (NTSSA contains these same provisions, 6 U.S.C. 1142(e), (f), and (g), but the comments specifically referenced FRSA.) The AFL–CIO Transportation Trades Department asserted that railroad employees have the right to seek relief under both collective bargaining agreements and the whistleblower provision in 49 U.S.C. 20109, and that a claim or grievance filed by a railroad employee for an alleged violation of the collective bargaining agreement should not bar the employee from seeking remedies available under FRSA. This commenter stated that the rights to organize, to bargain collectively, and to file grievances for collective bargaining agreement violations provided for in the Railway Labor Act (RLA), 45 U.S.C. 151 *et seq.,* which governs labor-management relations in the railroad industry, ''are essential to maintaining decent wages, and health and retirement benefits, as well as providing a legal remedy for workers who have been wronged by their employers.'' According to this commenter, it would make no sense for Congress to have intended ''to strip rail employees of contractual rights'' when it provided whistleblower railroad employees a statutory remedy against retaliation. Rail Labor urged OSHA to interpret paragraph (f) of FRSA, the election of remedies provision, as not barring claims made by an employee under the Federal Employers' Liability Act (FELA), 45 U.S.C. 51 *et seq.,* or a collective bargaining agreement, when a FRSA claim has been filed, or vice versa. Rather, Rail Labor suggested, the election of remedies provision could apply to state public policy doctrines or state whistleblower statutes or regulations. Rail Labor urged OSHA to interpret section 20109(g) of FRSA, the no-preemption provision, to mean that FRSA has no bearing on FRA's jurisdiction under 49 CFR part 225 to investigate, make findings, and levy and enforce penalties against railroad carriers for prohibited conduct. Also referencing the FRA regulation at 49 CFR part 225, the Utah Transit Authority FrontRunner Commuter Rail commented that all railroad carriers are already governed by 49 CFR 225.33(a)(1) and (2), and suggested that OSHA should cross-reference these regulations to avoid regulatory duplication. Rail Labor also urged OSHA to interpret paragraph (h) of FRSA, the rights retained by an employee provision, to mean that section 20109 has no bearing on matters under the RLA or collective bargaining agreements, and that the rights provided for in FRSA are not a proper subject of collective bargaining and not subject to waiver. Lastly, Rail Labor urged OSHA to state that the RLA and railroad collective bargaining agreements do not provide whistleblower protection, that a railroad carrier's pre-disciplinary investigations and disciplinary decisions do not address an employee's whistleblower claims, and that the National Railroad Adjustment Board has no jurisdiction to adjudicate whistleblower claims under FRSA.

OSHA does not believe that the changes to the text of these procedural rules suggested by these commenters are necessary. However, OSHA notes that the specific issue of the applicability of FRSA's election of remedies provision to an arbitration brought pursuant to the employee's collective bargaining agreement under the RLA was decided by the ARB in the consolidated cases of *Koger* v. *Norfolk Southern Railway Co.* and *Mercier* v. *Union Pacific Railroad,* ARB Nos. 09–101 and 09–121, 2011 WL 4889278 (ARB Sept. 29, 2011). The ARB concluded that FRSA's election of remedies provision permits a whistleblower claim to proceed notwithstanding the employee's pursuit of a grievance or arbitration under a collective bargaining agreement. *Id.* at *8. The ARB's decision constitutes the Secretary's interpretation of the election of remedies provision on this issue and nothing in these final rules alters the ARB's conclusion. Three circuit courts of appeals and numerous district courts have agreed with the Secretary's conclusion. *See Norfolk S. Ry. Co.* v. *Perez,* 778 F.3d 507 (6th Cir. 2015); *Grimes* v. *BNSF Ry. Co.,* 746 F.3d 184 (5th Cir. 2014); *Reed* v. *Norfolk S. Ry. Co.,* 740 F.3d 420 (7th Cir. 2014); *Koger* v. *Norfolk S. Ry. Co.,* No. 1:13–12030, 2014 WL 2778793 (S.D.W. Va. June 19, 2014); *Pfeiffer* v. *Union Pacific R.R. Co.,* No. 12–cv–2485, 2014 WL 2573326 (D. Kan. June 9, 2014); *Ray* v. *Union Pac. R.R.,* 971 F. Supp. 2d 869 (S.D. Iowa 2013); *Ratledge* v. *Norfolk S. Ry. Co.,* No. 1:12–cv–402, 2013 WL 3872793 (E.D. Tenn. July 25, 2013); *cf. Battenfield* v. *BNSF Ry. Co.,* No. 12–cv–213, 2013 WL 1309439 (N.D. Okla. Mar. 26, 2013) (examining section 20109(f) and permitting plaintiff to add FRSA retaliation claim despite having challenged his termination under his CBA); *Norfolk S. Ry. Co.* v. *Solis,* 915 F. Supp. 2d 32, 43–45 (D.D.C. 2013) (concluding that court did not have jurisdiction to review ARB's *Mercier* decision because the ARB's statutory interpretation was, at a minimum, a colorable interpretation of FRSA's election of remedies provision).

Furthermore, FRSA's election of remedies provision generally does not bar complainants from bringing both a FRSA retaliation claim and a complaint for compensation for a workplace injury under FELA. A worker who files a claim under FRSA and separately under FELA generally is not seeking ''protection under both [FRSA] and another provision of law for the same allegedly unlawful act of the railroad carrier.'' Under FRSA, a worker may seek reinstatement, back pay, and damages resulting from an act of retaliation by the railroad because of the worker's protected activity. Under FELA, a worker may seek damages for a workplace injury that was due in whole or part to the railroad's negligence. The conduct that gives rise to a retaliation claim under FRSA generally differs from the conduct that causes a worker's injury, which is the subject of a FELA claim. The latter involves a general standard of care that a railroad owes a worker while the former is akin to an intentional tort. OSHA notes that employees routinely pursue a FRSA claim and a FELA claim concurrently in district court. *See, e.g., Davis* v. *Union Pacific R.R. Co.,* __ F. Supp. 2d __, 2014 WL 3499228 (W.D. La. Jul. 14, 2014); *Barati* v. *Metro-North R.R.,* 939 F. Supp. 2d 153 (D. Conn. 2013); *Cook* v. *Union*

Pacific R.R. Co., No. 10–6339–TC, 2011 WL 5842795 (D. Or. Nov. 18, 2011).

Additionally, in response to Rail Labor's and Utah Transit Authority FrontRunner Commuter Rail's comments concerning FRA's regulation at 49 CFR part 225, OSHA notes that an employee's ability to pursue a retaliation claim under FRSA seeking reinstatement and a monetary remedy is separate from and is not limited by FRA's authority to investigate, make findings, levy and enforce penalties, or take other enforcement action against railroads for conduct prohibited by 49 CFR part 225, including violations of 49 CFR 225.33. Likewise, an employee's ability to pursue a retaliation claim under FRSA does not limit FRA's authority to enforce 49 CFR part 225. As previously explained, 49 CFR 225.33(a)(1) requires that each railroad carrier adopt and comply with an internal control plan that includes a policy statement declaring the railroad carrier's commitment to complete and accurate reporting of all accidents, incidents, injuries, and occupational illnesses arising from the operation of the railroad carrier. The policy statement must also declare the railroad carrier's commitment to prohibiting harassment or intimidation of any person that is intended to discourage or prevent such person from receiving proper medical treatment for or from reporting such accident, incident, injury, and illness. In addition, 49 CFR 225.33(a)(2) requires that each railroad carrier disseminate such policy statement to all employees, have procedures to process complaints that the policy statement has been violated, and impose discipline on the individual(s) violating the policy statement. While an act of intimidation and harassment, such as a threat of discipline, may run afoul of both 49 CFR 225.33 and 49 U.S.C. 20109, this overlap does not lead to regulatory duplication. FRA's ability to utilize its enforcement tools to cite a railroad for a violation of its policy statement against harassment and intimidation calculated to prevent an employee from reporting a casualty or accident or receiving proper medical treatment, and FRA's ability to discipline an individual such as a manager for violation of such policy, is not a remedy for the individual railroad employee who may have suffered retaliation as result of reporting an injury or requesting medical treatment. By contrast, FRSA gives employees the right to obtain reinstatement, back pay and appropriate damages resulting from a railroad's retaliation because the employee reports an injury or requests medical treatment.

Comment Regarding the Secretary's Compliance With Statutory Timelines

Mr. Todd Miller commented generally that the regulations do not provide a means for redress where OSHA does not meet the timelines provided for in the statute. Courts and the ARB have long recognized that failure to complete the investigation or issue a final decision within the statutory time frame does not deprive the Secretary of jurisdiction over a whistleblower complaint. *See, e.g., Passaic Valley Sewerage Comm'rs* v. *U.S. Dep't of Labor,* 992 F.2d 474, 477 n.7 (3d Cir. 1993); *Roadway Express, Inc.* v. *Dole,* 929 F.2d 1060, 1066 (5th Cir. 1991); *Lewis* v. *Metro. Transp. Auth.,* ARB No. 11–070, 2011 WL 3882486, at *2 (ARB Aug. 8, 2011); *Welch* v. *Cardinal Bankshares,* ARB No. 04–054, 2004 WL 5030301 (ARB May 13, 2004). The Secretary is cognizant of NTSSA and FRSA's statutory directives regarding completion of the OSHA investigation and administrative proceedings and the need to resolve whistleblower complaints expeditiously. However, in those instances where the agency cannot complete the administrative proceedings within the statutory timeframes, NTSSA's and FRSA's ''kick-out'' provisions, which allow a complainant to file a complaint for de novo review in federal district court if the Secretary has not issued a final decision within 210 days of the filing of the complaint, allow the complainant an alternative avenue for resolution of the whistleblower complaint.

Subpart A—Complaints, Investigations, Findings and Preliminary Orders

Section 1982.100 Purpose and Scope

This section describes the purpose of the regulations implementing NTSSA and FRSA and provides an overview of the procedures covered by these regulations. No comments were received on this section. However, OSHA has added a statement in subparagraph (a) noting that FRSA protects employees against delay, denial or interference with first aid or medical treatment for workplace injuries. OSHA has also added a statement in subparagraph (b) noting that these rules set forth the Secretary's interpretations of NTSSA and FRSA on certain statutory issues.

Section 1982.101 Definitions

This section includes general definitions applicable to the employee protection provisions of NTSSA and FRSA.

The definition section of NTSSA, 6 U.S.C. 1131(5), defines ''public transportation agency'' as ''a publicly owned operator of public transportation eligible to receive federal assistance under chapter 53 of title 49.'' Chapter 53 of title 49, 49 U.S.C. 5302(14), defines ''public transportation'' as ''regular, continuing shared-ride surface transportation services that are open to the general public or open to a segment of the general public defined by age, disability, or low income; and does not include: Intercity passenger rail transportation provided by the entity described in chapter 243 (or a successor to such entity); intercity bus service; charter bus service; school bus service; sightseeing service; courtesy shuttle service for patrons of one or more specific establishments; or intra-terminal or intra-facility shuttle services.'' Chapter 243, 49 U.S.C. 24301 *et seq.,* governs Amtrak. The definition of ''public transportation'' has been updated as needed to be consistent with 2012 amendments to 49 U.S.C. 5302.

In the interim final rule, OSHA stated that the definition section of FRSA, 49 U.S.C. 20102(2), defined ''railroad carrier'' as ''a person providing railroad transportation,'' and that section 20102(1) defined ''railroad'' as ''any form of nonhighway ground transportation that runs on rails or electromagnetic guideways, including commuter or other short-haul railroad passenger service in a metropolitan or suburban area and commuter railroad service that was operated by the Consolidated Rail Corporation on January 1, 1979; and high speed ground transportation systems that connect metropolitan areas, without regard to whether those systems use new technologies not associated with traditional railroads; but does not include rapid transit operations in an urban area that are not connected to the general railroad system of transportation.'' 75 FR at 53523–24. It has come to OSHA's attention that these citations were incorrect. Section 20102 of FRSA was amended such that the definition of ''railroad carrier'' is now in paragraph (3), not (2), and that the definition of ''railroad'' is now in paragraph (2), not (1). Public Law 110–432, 122 Stat. 4850, 4886 (Oct. 16, 2008). In addition, the definition of ''railroad carrier'' was modified: It is defined as ''a person providing railroad transportation, except that, upon petition by a group of commonly controlled railroad carriers that the Secretary [of Transportation] determines is operating within the United States as a single, integrated rail system, the

Secretary [of Transportation] may by order treat the group of railroad carriers as a single railroad carrier for purposes of one or more provisions of part A, subtitle V of [ ] title [49] and implementing regulations and order, subject to any appropriate conditions that the Secretary [of Transportation] may impose.'' 49 U.S.C. 20102(3). The regulatory text in section 1982.101(k) is modified accordingly in the final rule. The definition of ''railroad'' remains the same as in the interim final rule.

The AFL–CIO Transportation Trades Department suggested that OSHA define ''public transportation agency'' and ''railroad carrier'' to include explicitly as covered employers owners, as well as contractors and subcontractors acting as operators. Rail Labor suggested that OSHA supplement these definitions by clarifying coverage over joint employers because, according to Rail Labor, the current regulatory definition does not address retaliation by railroad owners who are not operators. Under NTSSA, a covered employer is a ''public transportation agency,'' which the statute defines in relevant part as ''a publicly owned operator of public transportation.'' Similarly, under FRSA, a covered employer is a ''railroad carrier,'' which the statute defines in relevant part as ''a person providing railroad transportation.'' Thus, these statutes contain specific definitions of a covered employer. The determination of whether an ''operator'' (in the case of NTSSA) or ''a person providing'' (in the case of FRSA) includes owners who are not operators may turn on the facts of a given case and is better addressed through the adjudication of cases under NTSSA and FRSA rather than in these procedural rules. OSHA notes that NTSSA prohibits a contractor or subcontractor of a public transportation agency from engaging in the retaliatory conduct prohibited under the statute. 6 U.S.C. 1142(a) and (b). Similarly, FRSA prohibits a contractor or subcontractor of a railroad carrier from engaging in certain retaliatory conduct prohibited under the statue. 49 U.S.C. 20109(a). Therefore, OSHA declines to make the changes to this section suggested by AFL–CIO Transportation Trades Department and Rail Labor.

Section 1982.102 Obligations and Prohibited Acts

This section describes the activities that are protected under NTSSA and FRSA, and the conduct that is prohibited in response to any protected activities. Minor corrections have been made throughout this section to more closely parallel NTSSA and FRSA and OSHA's procedural rules under other whistleblower statutes and the section has been renumbered to better comply with the drafting requirements of the **Federal Register**.

In light of OSHA's revised position regarding 49 U.S.C. 20109(c)(1) discussed above, the regulatory text for this section of FRSA has been modified to more closely mirror the statutory text of section 20109(c) and to include the (c)(1) provision as 29 CFR 1982.102(b)(3)(i).

Rail Labor and the AFL–CIO Transportation Trades Department each commented on the exception to FRSA's prompt medical attention provision in 49 U.S.C. 20109(c)(2) permitting a railroad carrier to refuse to allow an employee to return to work when that refusal is pursuant to FRA's medical standards for fitness of duty, or, if no such standards exist, then pursuant to the railroad carrier's own medical standards for fitness of duty. They argued that this exception gives railroad carriers the ability to use groundless medical refusals as a substitute for retaliatory discipline or other forms of retaliation. Therefore, they urged OSHA to include a statement in the regulation that a railroad carrier's refusal must be done in good faith and with a reasonable basis of medical fact, and that when the railroad carrier is relying on its own standards, those standards must be established in the carrier's official policies, be medically reasonable, and uniformly applied. By contrast, the American Public Transportation Association commented that the protection against discipline for requesting medical treatment or following a treatment plan ignores management's right to discipline employees whose injuries are directly caused by a violation of work rules or procedures. This commenter suggested that this rule should recognize management's right to discipline employees in such situations, and that this right is independent of management's obligation not to discipline an employee for requesting medical treatment.

OSHA declines to change the text of these regulations in response to these comments but notes that these commenters raise legitimate concerns regarding the adjudication of cases under FRSA. For example, the question of whether a railroad's discipline of an employee is in retaliation for requesting medical treatment or results from the legitimate application of a work rule or procedure is often the central question in a FRSA complaint. In each complaint, that question should be resolved based on the specific facts of the case and the applicable case law.

Similarly, OSHA believes that the safe-harbor in 49 U.S.C. 20109(c)(2) requires that the railroad's refusal to allow an employee to return to work be in good faith. A retaliatory refusal to permit an employee to return to work cannot properly be regarded as made ''pursuant to'' FRA's or the carrier's own medical standards for fitness for duty under the statute. Any other interpretation of the provision would permit a railroad carrier to refuse to allow an employee to return to work in retaliation against the employee for reporting the injury (which would violate 20109(a)(4)) or as a means for extending retaliatory discipline prohibited by 20109(c)(2). However, OSHA declines to incorporate the language proposed by the commenters into the rule, which mirrors the statutory language. Evidence that a railroad carrier's refusal to allow an employee to return to work is not reasonable based on the employee's medical condition may be important to show that the refusal is not in good faith and constitutes retaliation. Evidence that a refusal is based on carrier standards that are not recorded in the carrier's official policies, not uniformly applied or not medically reasonable likewise may help to demonstrate that the refusal is due not to a legitimate safety concern of the railroad carrier but rather is motivated by retaliatory intent. However, the question of whether a particular refusal to permit an employee to return to work falls outside 20109(c)(2)'s safe harbor turns on the facts of the case and should be adjudicated in accordance with the applicable case law.

Finally, in a change that is not intended to have substantive effect, the terms ''retaliate'' and ''retaliation'' have been substituted for the terms ''discriminate'' and ''discrimination,'' which were used in the interim final rule. This change makes the terminology used in this rule consistent with the terminology in OSHA's more recently promulgated whistleblower rules. Subheadings have been added to more clearly indicate which activities are protected under NTSSA and which are protected under FRSA and the paragraphs have been renumbered as needed to comply with **Federal Register** drafting requirements and to reflect that the protections in 49 U.S.C. 20109(c)(1) have been added.

Section 1982.103 Filing of Retaliation Complaints

This section explains the requirements for filing a retaliation complaint under NTSSA and FRSA. To be timely, a complaint must be filed within 180 days of when the alleged violation occurs. Under *Delaware State College* v. *Ricks,* 449 U.S. 250, 258 (1980), this is considered to be when the retaliatory decision has been both made and communicated to the complainant. In other words, the limitations period commences once the employee is aware or reasonably should be aware of the employer's decision to take an adverse action, not when the employee learns of the retaliatory nature of the action. *See Equal Emp't Opportunity Comm'n* v. *United Parcel Serv., Inc.,* 249 F.3d 557, 561–62 (6th Cir. 2001). Complaints filed under NTSSA or FRSA need not be in any particular form. They may be either oral or in writing. If the complainant is unable to file the complaint in English, OSHA will accept the complaint in any language. With the consent of the employee, complaints may be filed by any person on the employee's behalf.

GAP expressed support for Sections 1982.103(b) (nature of filing) and (d) (time for filing), which outline the form of filing and the time for filing, respectively, and commented that they improved protection for whistleblowers. GAP also asked that the text of section 1982.103(d) clarify that the 180-day statute of limitations for filing a complaint under FRSA and NTSSA does not begin to run until an employee becomes aware of an alleged retaliatory act. OSHA believes that the rule as drafted properly states the statute of limitations but has added a sentence to further explain that because OSHA may consider the statute of limitations tolled for reasons warranted by applicable case law. OSHA may, for example, consider the time for filing a complaint equitably tolled if a complainant mistakenly files a complaint with another agency instead of OSHA within 180 days after becoming aware of the alleged violation.

AAR asserted that complaints should be accepted only in writing, not orally as well. AAR argued that permitting oral complaints is not consistent with the regulations in AIR 21, which section 20109(d)(2) of FRSA requires the Secretary to follow in administering FRSA actions. AAR further argues that FRSA's use of the word ''filing'' in section 20109(d)(1) contemplates a writing. According to AAR, requiring written complaints is better from a policy perspective because written complaints are clearer and less burdensome and inefficient for both OSHA and employers. ASLRRA similarly urged OSHA to require that all complaints must be in writing, for much the same reasons that AAR expressed. In addition, ASLRRA suggested that written complaints must include a statement of the acts and omissions, with pertinent dates, that are believed to have created the statutory violation.

OSHA declines to adopt AAR's and ASLRRA's suggestion and will permit complaints to be made orally or in writing. Submission of a complaint in writing is not a statutory requirement of NTSSA, FRSA, or AIR 21. *Cf. Kasten* v. *Saint-Gobain Performance Plastics Corp.,* 131 S. Ct. 1325, 2011 WL 977061, at *2 (2011) (the statutory term ''filed any complaint'' in the Fair Labor Standards Act includes oral as well as written complaints). OSHA is generally updating its whistleblower procedures to allow oral complaints. Permitting oral complaints is consistent with decisions of the ARB permitting oral complaints. *See, e.g., Roberts* v. *Rivas Env't Consultants, Inc.,* ARB No. 97–026, 1997 WL 578330, at *3 n.6 (ARB Sept. 17, 1997) (complainant's oral statement to an OSHA investigator, and the subsequent preparation of an internal memorandum by that investigator summarizing the oral complaint, satisfies the ''in writing'' requirement of Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. 9610(b), and the Department's accompanying regulations in 29 CFR part 24); *Dartey* v. *Zack Co. of Chicago,* No. 82–ERA–2, 1983 WL 189787, at *3 n.1 (Office of Admin. App. Apr. 25, 1983) (adopting ALJ's findings that complainant's filing of a complaint to the wrong DOL office did not render the filing invalid and that the agency's memorandum of the complaint satisfied the ''in writing'' requirement of the Energy Reorganization Act of 1974, as amended, (ERA), 42 U.S.C. 5851, and the Department's accompanying regulations in 29 CFR part 24). Moreover, this is consistent with OSHA's longstanding practice of accepting oral complaints filed under Section 11(c) of the Occupational Safety and Health Act of 1970, 29 U.S.C. 660(c); Section 211 of the Asbestos Hazard Emergency Response Act of 1986, 15 U.S.C. 2651; Section 7 of the International Safe Container Act of 1977, 46 U.S.C. 80507; and the Surface Transportation Assistance Act of 1982, 49 U.S.C. 31105.

OSHA notes that a complaint of retaliation filed with OSHA under NTSSA and FRSA is not a formal document and need not conform to the pleading standards for complaints filed in federal district court articulated in *Bell Atlantic Corp.* v. *Twombly,* 550 U.S. 544 (2007) and *Ashcroft* v. *Iqbal,* 556 U.S. 662 (2009). *See Sylvester* v. *Parexel Int'l, Inc.,* ARB No. 07–123, 2011 WL 2165854, at *9–10 (ARB May 26, 2011) (holding whistleblower complaints filed with OSHA under analogous provisions in the Sarbanes-Oxley Act need not conform to federal court pleading standards). Rather, the complaint filed with OSHA under this section simply alerts the agency to the existence of the alleged retaliation and the complainant's desire that the agency investigate the complaint. Upon the filing of a complaint with OSHA, OSHA is to determine whether ''the complaint, supplemented as appropriate by interviews of the complainant'' alleges ''the existence of facts and evidence to make a prima facie showing,'' 29 CFR 1982.104(e). As explained in section 1982.104(e), if the complaint, supplemented as appropriate, contains a prima facie allegation, and the respondent does not show clear and convincing evidence that it would have taken the same action in the absence of the alleged protected activity, OSHA conducts an investigation to determine whether there is reasonable cause to believe that retaliation has occurred. *See* 6 U.S.C. 1142(c)(2)(B) (providing burdens of proof applicable to complaints under NTSSA); 49 U.S.C. 42121(b)(2)(B) (providing the burdens of proof applicable to complaints under FRSA).

In the final rule, OSHA has deleted the phrase ''by an employer'' from paragraph (a) of this section in order to better reflect NTSSA's and FRSA's statutory provisions prohibiting retaliation by officers and employees as well as railroad carriers, public transportation agencies and those entities' contractors and subcontractors, and has made other minor changes as needed to clarify the provision without changing its meaning.

Section 1982.104 Investigation

This section describes the procedures that apply to the investigation of complaints under NTSSA and FRSA. Paragraph (a) of this section outlines the procedures for notifying the parties and appropriate federal agencies of the complaint and notifying the respondent of its rights under these regulations. Paragraph (b) describes the procedures for the respondent to submit its response to the complaint. As explained below, paragraph (c) has been revised in response to the comments to state that OSHA will request that the parties provide each other with copies of their submissions to OSHA during the investigation and that, if a party does not provide such copies, OSHA will do so at a time permitting the other party an opportunity to respond to those submissions. Before providing such materials, OSHA will redact them in accordance with the Privacy Act of 1974, 5 U.S.C. 552a, *et seq.,* and other applicable confidentiality laws. Paragraph (d) of this section discusses confidentiality of information provided during investigations.

Paragraph (e) of this section sets forth NTSSA's and FRSA's statutory burdens of proof. FRSA adopts the burdens of proof provided under AIR 21, 49 U.S.C. 42121(b)(2), which are the same as those provided under NTSSA. Therefore, this paragraph generally conforms to the similar provision in the regulations implementing AIR 21.

The statutes require that a complainant make an initial prima facie showing that a protected activity was ''a contributing factor'' in the adverse action alleged in the complaint, *i.e.,* that the protected activity, alone or in combination with other factors, affected in some way the outcome of the employer's decision. The complainant will be considered to have met the required burden if the complaint on its face, supplemented as appropriate through interviews of the complainant, alleges the existence of facts and either direct or circumstantial evidence to meet the required showing. The complainant's burden may be satisfied, for example, if he or she shows that the adverse action took place within a temporal proximity of the protected activity, or at the first opportunity available to the respondent, giving rise to the inference that it was a contributing factor in the adverse action. *See, e.g., Porter* v. *Cal. Dep't of Corrs.,* 419 F.3d 885, 895 (9th Cir. 2005) (years between the protected activity and the retaliatory actions did not defeat a finding of a causal connection where the defendant did not have the opportunity to retaliate until he was given responsibility for making personnel decisions).

If the complainant does not make the required prima facie showing, the investigation must be discontinued and the complaint dismissed. *See Trimmer* v. *U.S. Dep't of Labor,* 174 F.3d 1098, 1101 (10th Cir. 1999) (noting that the burden-shifting framework of the Energy Reorganization Act of 1974 (ERA), which is the same as those under NTSSA and FRSA, serves a ''gatekeeping function'' that ''stem[s] frivolous complaints''). Even in cases where the complainant successfully makes a prima facie showing, the investigation must be discontinued if the employer demonstrates, by clear and convincing evidence, that it would have taken the same adverse action in the absence of the protected activity. Thus, OSHA must dismiss a complaint under NTSSA or FRSA and not investigate further if either: (1) The complainant fails to meet the prima facie showing that protected activity was a contributing factor in the alleged adverse action; or (2) the employer rebuts that showing by clear and convincing evidence that it would have taken the same adverse action absent the protected activity.

Assuming that an investigation proceeds beyond the gatekeeping phase, the statute requires OSHA to determine whether there is reasonable cause to believe that protected activity was a contributing factor in the alleged adverse action. A contributing factor is ''any factor which, alone or in connection with other factors, tends to affect in any way the outcome of the decision.'' *Araujo* v. *New Jersey Transit Rail Ops., Inc.,* 708 F.3d 152, 158 (3d Cir. 2013), *quoting Marano* v. *Dep't of Justice,* 2 F.3d 1137, 1140 (Fed. Cir. 1993) (internal quotation marks, emphasis and citation omitted) (discussing the Whistleblower Protection Act, 5 U.S.C. 1221(e)(1)). For protected activity to be a contributing factor in the adverse action, ''a complainant need not necessarily prove that the respondent's articulated reason was a pretext in order to prevail,'' because a complainant alternatively can prevail by showing that the respondent's ''reason, while true, is only one of the reasons for its conduct,'' and that another reason was the complainant's protected activity. *See Klopfenstein* v. *PCC Flow Techs. Holdings, Inc.,* ARB No. 04–149, 2006 WL 3246904, at *13 (ARB May 31, 2006) (quoting *Rachid* v. *Jack in the Box, Inc.,* 376 F.3d 305, 312 (5th Cir. 2004)) (discussing contributing factor test under the Sarbanes-Oxley Act whistleblower provision), *aff'd sub nom. Klopfenstein* v. *Admin. Review Bd., U.S. Dep't of Labor,* 402 F. App'x 936, 2010 WL 4746668 (5th Cir. 2010).

If OSHA finds reasonable cause to believe that the alleged protected activity was a contributing factor in the adverse action, OSHA may not order relief if the employer demonstrates by ''clear and convincing evidence'' that it would have taken the same action in the absence of the protected activity. *See* 6 U.S.C. 1142(c)(2)(B)(iv); 49 U.S.C. 42121(b)(2)(B)(iv). The ''clear and convincing evidence'' standard is a higher burden of proof than a ''preponderance of the evidence'' standard. Clear and convincing evidence is evidence indicating that the thing to be proved is highly probable or reasonably certain. *Clarke* v. *Navajo Express,* ARB No. 09–114, 2011 WL 2614326, at *3 (ARB June 29, 2011); *see also Araujo,* 708 F.3d at 159.

Paragraph (f) describes the procedures OSHA will follow prior to the issuance of findings and a preliminary order when OSHA has reasonable cause to believe that a violation has occurred and that preliminary reinstatement is warranted.

NWC, GAP, AAR, and ASLRRA commented on the provisions in section 1982.104. NWC suggested that the phrase ''other applicable confidentiality laws'' in 1982.104(c) be replaced with more specific language describing the confidentiality laws that might apply to a respondent's answer. NWC also suggested that OSHA provide a copy of the response to the complainant, and give the complainant an opportunity to respond. NWC noted that to conduct a full and fair investigation, OSHA needs to obtain the available, responsive information from both parties. If one party does not have the information submitted by the other, NWC explained, that party cannot help the investigation by providing available information to shed light on the matter.

GAP commented that while it was pleased with the provisions in section 1982.104 providing copies of respondent's submissions to complainants and protecting witness confidentiality, it was concerned that the procedures under section 1982.104(f) ''disenfranchise[d] the victim, giving only one side of the dispute the chance to participate in the most significant step of the process'' and that ''[a]t a minimum, this procedural favoritism means there will not be an even playing field in the administrative hearing.'' GAP advocated removing section 1982.104(f).

AAR commented that a complainant should not have access to a railroad carrier's confidential and/or privileged information, including internal business records, and investigative materials. According to AAR, it would be unfair for OSHA to provide such information to the complainant when a railroad carrier would be able to protect itself from the disclosure of such information in the context of litigation. AAR proposed that OSHA amend the language in 1982.104(c) to state that OSHA will not provide the complainant with any information the railroad carrier marks ''confidential,'' and that if OSHA disagrees with the railroad carrier's determination, OSHA will afford the railroad carrier an opportunity to justify its position before disclosure.

AAR also proposed that OSHA should allow railroad carriers access to all of OSHA's interview notes, submissions, testimony, and other evidence (redacted if necessary). It also suggested that OSHA broaden the language in paragraph (f) to require OSHA to provide the employer with the allegations and evidence relied upon by the complainant as OSHA processes a complaint, and that the employer should receive this information regardless of whether reinstatement is an issue. AAR argued that, overall, section 1982.104 puts the railroad carrier and the complainant on unequal footing, with the complainant having more timely access to information than the railroad carrier. AAR further noted that the comparable regulation under AIR 21, 29 CFR 1979.104(a), requires OSHA to provide the respondent ''the substance of the evidence supporting the complaint'' upon receipt of the complaint, rather than waiting until the Secretary believes preliminary reinstatement is warranted as in section 1982.104(f). According to AAR, providing the respondent with the evidence supporting the complaint at that late stage in the proceeding, as is contemplated by section 1982.104, is inconsistent with the statutory directive that AIR 21 procedures apply. AAR suggested that the respondent be provided with all of the evidence at the outset of a case, as well as throughout the course of a case.

Lastly, ASLRRA expressed concern with the statement in section 1982.104(e)(3) that a complainant may satisfy his prima facie showing requirement by showing that the adverse action took place shortly after the protected activity. According to ASLRRA, timing alone is insufficient to establish a prima face case of retaliation as timing is only one of many factors to consider. Further, according to ASLRRA, relying on timing is particularly problematic in a unionized workplace, where employers are contractually obligated to follow certain disciplinary procedures with short time limits.

Regarding NWC's suggestion that OSHA provide more specific information about the confidentiality laws that may protect portions of the information submitted by a respondent and AAR's concern regarding protection of information that would not otherwise be discoverable, OSHA believes that the vast majority of respondent submissions will not be subject to any confidentiality laws. However, OSHA recognizes that, in addition to the Privacy Act, a variety of confidentiality provisions may protect information submitted during the course of an investigation. For example, a respondent may submit information that the respondent identifies as confidential commercial or financial information exempt from disclosure under the Freedom of Information Act (FOIA). OSHA's procedures for handling information identified as confidential during an investigation are explained in OSHA's Whistleblower Investigations Manual, available at: *http://www.whistleblowers.gov/regulations_page.html.* As the investigation manual illustrates, OSHA is cognizant of the protections available to employers and therefore believes there is no need to modify the regulatory text to ensure that employers' confidential information is protected.

With regard to NWC and GAP's comments seeking more opportunities for the complainant to be involved in the investigation of the complainant's whistleblower complaint, OSHA agrees with NWC and GAP that the input of both parties in the investigation is important to ensuring that OSHA reaches the proper outcome during its investigation and has made two changes in response to these comments. Section 1982.104(c) of the IFR provided that, throughout the investigation, the agency would provide the complainant (or the complainant's legal counsel if the complainant is represented by counsel) a copy of all of respondent's submissions to the agency that are responsive to the complainant's whistleblower complaint, redacted of confidential information as necessary. In response to the commenters, the final rule has been revised to state that OSHA will request that the parties provide each other with copies of their submissions to OSHA during the investigation and that, if a party does not provide such copies, OSHA will do so at a time permitting the other party an opportunity to respond to those submissions. Also, section 1982.104(f) provides that the complainant will receive a copy of the materials that must be provided to the respondent under that paragraph.

With regard to GAP's comment that section 1982.104(f) should be removed and AAR's comment that this provision should be expanded to all cases regardless of whether reinstatement is at issue, OSHA notes that the purpose of 1982.104(f) is to ensure compliance with the Supreme Court's ruling in *Brock* v. *Roadway Express,* 481 U.S. 252, 264 (1987). In that decision, the Court upheld the facial constitutionality of the analogous provisions providing for preliminary reinstatement under STAA, 49 U.S.C. 31105, and the procedures adopted by OSHA to protect the respondent's rights under the Due Process Clause of the Fifth Amendment, but ruled that the record failed to show that OSHA investigators had informed the respondent of the substance of the evidence to support reinstatement of the discharged employee. In so finding, the Court noted that although a formal hearing was not required before OSHA ordered preliminary reinstatement ''minimum due process for the employer in this context requires notice of the employee's allegations, notice of the substance of the relevant supporting evidence, an opportunity to submit a written response, and an opportunity to meet with the investigator and present statements from rebuttal witnesses.'' *Roadway Express,* 481 U.S. at 264; *see Bechtel* v. *Competitive Techs., Inc.,* 448 F.3d 469, 480–81 (Leval, J., concurring) (finding OSHA's preliminary reinstatement order under Sarbanes-Oxley unenforceable because the information provided to the respondent did not meet the requirements of *Roadway Express*). Thus, OSHA declines to remove the language providing the respondent notice and opportunity to respond under section 1982.104(f). Also, because in cases not involving preliminary reinstatement all of the remedies in the Secretary's preliminary order are stayed if the respondent files objections and requests a hearing, OSHA believes that the hearing procedures provided by these rules adequately protect respondents' due process rights in those cases. Expanding the application of section 1982.104(f) to cases not involving preliminary reinstatement would significantly delay investigations of FRSA and NTSSA cases but would not ensure any additional due process rights for respondents.

Also in response to AAR's comments regarding the information to be provided to respondents during the investigation, OSHA agrees, in part, with AAR's comments. NTSAA and FRSA, through its incorporation of AIR 21's rules and procedures, both indicate that the Secretary, upon receipt of a complaint, shall notify the respondent not only of the filing of the complaint, but also of the allegations contained in the complaint and of the substance of the evidence supporting the complaint. *See* 6 U.S.C. 1142(c)(1); 49 U.S.C. 20109(d)(2)(A); 49 U.S.C. 42121(b)(1). Accordingly, the Department has revised section 1982.104(a) to reflect this statutory language and to be consistent with AIR 21's regulation at section 1979.104(a).

Lastly, OSHA rejects ASLRRA's comment that 1982.104(e) should be revised to state that the timing of an adverse action alone is insufficient to establish a causal connection between the complainant's protected activity and the adverse action. At the gatekeeping phase, where OSHA is simply determining whether to conduct an investigation, the timing of the adverse action may be sufficient to give rise to an inference that the protected activity was a contributing factor in the adverse action so that the investigation may proceed. *See Taylor* v. *Wells Fargo Bank,* ARB No. 05–062, 2007 WL 7143176, at *3 n.12 (ARB June 28, 2007) (temporal proximity may establish the causal connection component of the prima facie case under Sarbanes-Oxley); *see also Bullington* v. *United Air Lines, Inc.,* 186 F.3d 1301, 1320 (10th Cir. 1999) (the causal connection necessary to show a prima facie case under Title VII or the ADEA may be inferred by protected conduct closely followed by adverse action); *Davis* v. *Union Pacific R.R. Co.,* Civ. A. No. 5:12–CV–2738, 2014 WL 3499228, at *9 (W.D. La. July 14, 2014) (finding temporal proximity between protected injury report and adverse action sufficient to create a genuine issue of material fact precluding summary judgment for railroad). This approach is consistent with the approach that OSHA has taken under other whistleblower statutes employing the same burdens of proof as FRSA and NTSSA. *See, e.g.,* 29 CFR 1979.104(e) (AIR 21); 29 CFR 1980.104(e) (Sarbanes-Oxley); Procedures for the Handling of Discrimination Complaints under Federal Employee Protection Statutes, 63 FR 6614–01, 6618 (Feb. 9, 1998) (explaining that under ERA temporal proximity is normally sufficient to establish causation at the gatekeeping phase). OSHA believes that it would be overly restrictive to require a complainant to provide evidence of retaliation (as distinguished from a showing) when the only purpose is to trigger an investigation to determine whether there is reasonable cause to believe that retaliation has occurred. Complainants in many cases do not have the knowledge or the resources to submit ''evidence'' of retaliation other than temporal proximity at the outset of OSHA's investigation.

In addition to the revisions noted above, minor changes were made as needed in this section to clarify the provision without changing its meaning.

Section 1982.105 Issuance of Findings and Preliminary Orders

This section provides that, on the basis of information obtained in the investigation, the Assistant Secretary will issue, within 60 days of the filing of a complaint, written findings regarding whether or not there is reasonable cause to believe that the complaint has merit. If the findings are that there is reasonable cause to believe that the complaint has merit, the Assistant Secretary will order appropriate relief, including preliminary reinstatement and back pay with interest and compensatory damages. To reflect the statutory language of FRSA and NTSSA and the agency's current practice, OSHA modified paragraph (a)(1) in the final rule to mirror the remedies listed in the statutes, including adding ''interest'' to the description of compensation that can be included in the preliminary order.

In ordering interest on back pay under FRSA and NTSSA, the Secretary has determined that interest due will be computed by compounding daily the Internal Revenue Service (IRS) interest rate for the underpayment of taxes which, under 26 U.S.C. 6621, is generally the Federal short-term rate plus three percentage points.

In the Secretary's view, 26 U.S.C. 6621 provides the appropriate rate of interest to ensure that victims of unlawful retaliation under FRSA and NTSSA are made whole. The Secretary has long applied the interest rate in 26 U.S.C. 6621 to calculate interest on back pay in whistleblower cases. *Doyle* v. *Hydro Nuclear Servs.,* ARB Nos. 99–041, 99–042, 00–012, 2000 WL 694384, at * 14–15, 17 (ARB May 17, 2000); *see also Cefalu* v. *Roadway Express, Inc.,* ARB No. 09–070, 2011 WL 1247212, at * 2 (ARB Mar. 17, 2011); *Pollock* v. *Cont'l Express,* ARB Nos. 07–073, 08–051, 2010 WL 1776974, at * 8 (ARB Apr. 10, 2010); *Murray* v. *Air Ride, Inc.,* ARB No. 00–045, slip op. at 9 (ARB Dec. 29, 2000). Section 6621 provides the appropriate measure of compensation under NTSSA, FRSA and other DOL-administered whistleblower statutes because it ensures the complainant will be placed in the same position he or she would have been in if no unlawful retaliation occurred. *See Ass't Sec'y* v. *Double R. Trucking, Inc.,* ARB Case No. 99–061, slip op. at 5 (ARB July 16, 1999) (interest awards pursuant to § 6621 are mandatory elements of complainant's make-whole remedy). Section 6621 provides a reasonably accurate prediction of market outcomes (which represents the loss of investment opportunity by the complainant and the employer's benefit from use of the withheld money) and thus provides the complainant with appropriate make-whole relief. *See EEOC* v. *Erie Cnty.,* 751 F.2d 79, 82 (2d Cir. 1984) (''[s]ince the goal of a suit under the [Fair Labor Standards Act] and the Equal Pay Act is to make whole the victims of the unlawful underpayment of wages, and since [§ 6621] has been adopted as a good indicator of the value of the use of money, it was well within'' the district court's discretion to calculate prejudgment interest under § 6621); *New Horizons for the Retarded,* 283 N.L.R.B. No. 181, 1987 WL 89652, at * 2 (May 28, 1987) (observing that ''the short-term Federal rate [used by § 6621] is based on average market yields on marketable Federal obligations and is influenced by private economic market forces'').

The Secretary also believes that daily compounding of interest achieves the make-whole purpose of a back pay award. Daily compounding of interest has become the norm in private lending and was found to be the most appropriate method of calculating interest on back pay by the National Labor Relations Board. *See Jackson Hosp. Corp.* v. *United Steel, Paper & Forestry, Rubber, Mfg., Energy, Allied Indus. & Serv. Workers Int'l Union,* 356 N.L.R.B. No. 8, 2010 WL 4318371, at * 3–4 (Oct. 22, 2010). Additionally, interest on tax underpayments under the Internal Revenue Code, 26 U.S.C. 6621, is compounded daily pursuant to 26 U.S.C. 6622(a). Thus, paragraph (a)(1) of this section now states that interest on back pay will be calculated using the interest rate applicable to underpayment of taxes under 26 U.S.C. 6621 and will be compounded daily.

In ordering back pay, OSHA also will require the respondent to submit the appropriate documentation to the Railroad Retirement Board or the Social Security Administration, as appropriate, allocating the back pay to the appropriate months (for employees who may be entitled to benefits under the Railroad Retirement Act) or calendar quarters (for employees who may be entitled to Social Security benefits). Requiring the reporting of back pay allocation to the Railroad Retirement Board or Social Security Administration serves the remedial purposes of FRSA and NTSSA by ensuring that employees subjected to retaliation are truly made whole. *See Don Chavas, LLC d/b/a Tortillas Don Chavas,* 361 NLRB No. 10, 2014 WL 3897178, at * 4–5 (NLRB Aug. 8, 2014). As the NLRB has explained, when back pay is not properly allocated to the years covered by the award, a complainant may be disadvantaged in several ways. First, improper allocation may interfere with a complainant's ability to qualify for any old-age Social Security benefit. *Id.* at * 4 (''Unless a [complainant's] multiyear backpay award is allocated to the appropriate years, she will not receive appropriate credit for the entire period covered by the award, and could therefore fail to qualify for any old-age social security benefit.''). Second, improper allocation may reduce the complainant's eventual monthly benefit. *Id.* As the NLRB explained, ''if a backpay award covering a multi-year period is posted as income for 1 year, it may result in SSA treating the [complainant] as having received wages in that year in excess of the annual contribution and benefit base.'' *Id.* Wages above this base are not subject to Social Security taxes, which reduces the amount paid on the employee's behalf. ''As a result, the [complainant's] eventual monthly benefit will be reduced because participants receive a greater benefit when they have paid more into the system.'' *Id.* Finally, ''social security benefits are calculated using a progressive formula: Although a participant receives more in benefits when she pays more into the system, the rate of return diminishes at higher annual incomes.'' Therefore, a complainant may ''receive a smaller monthly benefit when a multiyear award is posted to 1 year rather than being allocated to the appropriate periods, even if social security taxes were paid on the entire amount.'' *Id.* The purpose of a make-whole remedy such as back pay is to put the complainant in the same position the complainant would have been absent the prohibited retaliation. That purpose is not achieved when the complainant suffers the disadvantages described above. Therefore, OSHA has revised section (a)(1) of this paragraph to state that a preliminary order containing an award of back pay will also require the respondent to submit documentation to the Railroad Retirement Board or Social Security Administration to properly allocate back pay to the appropriate months or calendar quarters.

The findings and, where appropriate, preliminary order, advise the parties of their right to file objections to the findings of the Assistant Secretary and to request a hearing. The findings and, where appropriate, preliminary order, also advise the respondent of the right under NTSSA to request an award of attorney fees not exceeding $1,000 from the ALJ, regardless of whether the respondent has filed objections, if the respondent alleges that the complaint was frivolous or brought in bad faith. If no objections are filed within 30 days of receipt of the findings, the findings and any preliminary order of the Assistant Secretary become the final findings and order of the Secretary. If objections are timely filed, any order of preliminary reinstatement will take effect, but the remaining provisions of the order will not take effect until administrative proceedings are completed.

In appropriate circumstances, in lieu of preliminary reinstatement, OSHA may order that the complainant receive the same pay and benefits that he received prior to his termination, but not actually return to work. Such ''economic reinstatement'' frequently is employed in cases arising under Section 105(c) of the Federal Mine Safety and Health Act of 1977, which protects miners from retaliation (30 U.S.C. 815(c)). *See, e.g., Sec'y of Labor on behalf of York* v. *BR&D Enters., Inc.,* 23 FMSHRC 697, 2001 WL 1806020, at * 1 (ALJ June 26, 2001).

AAR and ASLRRA commented on the language in the preamble regarding economic reinstatement and urged OSHA to delete any reference to economic reinstatement. ASLRRA argued that OSHA does not have the authority under FRSA to require this remedy because it is not discussed in the statute and reliance on the Federal Mine Safety and Health Act is insufficient. AAR similarly argued that section 20109(d) of FRSA specifies the exclusive remedies available, and economic reinstatement is not listed as one of those remedies. In addition, both ASLRRA and AAR maintained that it is unfair to order economic reinstatement given the fact that it may take many months before the preliminary order requiring economic reinstatement is fully adjudicated and reviewed and that the employer cannot recover the costs of economic reinstatement if the employer ultimately prevails. AAR asserted that the only instance in which economic reinstatement is appropriate is when the railroad carrier voluntarily agrees to such a remedy.

OSHA declines to revise the rule in response to these comments. OSHA believes that it has the authority to order economic reinstatement. Economic reinstatement is akin to an order of front pay. Front pay has been recognized as a possible remedy under whistleblower statutes in limited circumstances where actual reinstatement would not be possible. *See, e.g., Moder* v. *Vill. of Jackson,* ARB Nos. 01–095, 02–039, 2003 WL 21499864, at * 10 (ARB June 30, 2003) (under environmental whistleblower statutes, ''front pay may be an appropriate substitute when the parties prove the impossibility of a productive and amicable working relationship, or the company no longer has a position for which the complainant is qualified''); *Hobby* v. *Georgia Power Co.,* ARB No. 98–166, 2001 WL 168898, at * 6–10 (ARB Feb. 9, 2001), *aff'd sub nom. Hobby* v. *U.S. Dep't of Labor,* No. 01–10916 (11th Cir. Sept. 30, 2002) (unpublished) (noting circumstances where front pay may be available in lieu of reinstatement but ordering reinstatement); *Michaud* v. *BSP Transp., Inc.,* ARB Nos. 97–113, 1997 WL 626849, at * 4 (ARB Oct. 9, 1997) (under STAA, front pay appropriate where employee was unable to work due to major depression resulting from the retaliation); *Doyle* v. *Hydro Nuclear Servs.,* ARB Nos. 99–041, 99–042, 00–012, 1996 WL 518592, at * 6 (ARB Sept. 6, 1996) (under ERA, front pay appropriate where employer had eliminated the employee's position); *Brown* v. *Lockheed Martin Corp.,* ALJ No. 2008–SOX–49, 2010 WL 2054426, at * 55–56 (ALJ Jan. 15, 2010) (noting that while reinstatement is the ''presumptive remedy'' under Sarbanes-Oxley, front pay may be awarded as a substitute when reinstatement is inappropriate).

However, OSHA emphasizes that Congress intended that employees be preliminarily reinstated to their positions if OSHA finds reasonable cause to believe that they were discharged in violation of NTSSA or FRSA. When a violation is found, the norm is for OSHA to order immediate preliminary reinstatement. Neither an employer nor an employee has a statutory right to choose economic reinstatement. Rather, economic reinstatement is designed to accommodate situations in which evidence establishes to OSHA's satisfaction that reinstatement is inadvisable for some reason, notwithstanding the employer's retaliatory discharge of the employee. In such situations, actual reinstatement might be delayed until after the administrative adjudication is completed as long as the employee continues to receive his or her pay and benefits and is not otherwise disadvantaged by a delay in reinstatement. There is no statutory basis for allowing the employer to recover the costs of economically reinstating an employee should the employer ultimately prevail in the whistleblower adjudication.

Two commenters addressed OSHA's authority to order reinstatement under FRSA in situations in which the railroad carrier asserts that such reinstatement will endanger the public, its property, and/or other employees. ASLRRA suggested that OSHA include an exception to the requirement that an employee be preliminarily reinstated immediately when a party has filed objections to OSHA's findings and/or order for situations in which the railroad carrier establishes that the employee poses a direct threat to the health or safety of himself or others. As support for this suggestion, ASLRRA pointed to a similar provision in the regulations under AIR 21 in which a preliminary reinstatement order is not appropriate when the employer establishes that the employee is a security risk, 29 CFR 1979.105(a)(1). Rail Labor suggested that OSHA respond to any arguments by railroad carriers that preliminary reinstatement is inappropriate when such reinstatement will endanger the public, the railroad carrier's property, or other employees by supplementing the regulatory language to state that the Assistant Secretary has sufficient discretion pursuant to section 1982.105 to balance the competing interests of the public, all employees, and the railroad carrier, and that the full range of remedies is available.

OSHA does not believe that it is necessary to include such an exception in the regulation as ASLRRA suggested or to supplement the language in the regulation as Rail Labor suggested because such cases may be adequately determined based on applicable case law. Also, the ALJ and the ARB each have sufficient discretion to stay a reinstatement order for exceptional circumstances, which may include the types of situations discussed by ASLRRA. *See* 1982.106(b); 1982.110(b).

AAR commented on the reference to ''abatement'' in section 1982.105(a)(1), and suggested that abatement under FRSA should be limited to relief for the individual employee. AAR asserted that, while section 20109 incorporates AIR 21's rules and procedures and AIR 21 provides for abatement as a remedy, 49 U.S.C. 42121(b)(3)(B)(i), section 20109 of FRSA contains its own remedy provision, 49 U.S.C. 20109(e), and nothing in section 20109(e) provides for abatement orders directed at an employer's practices and procedures. As an initial matter, OSHA notes that this comment addresses FRSA only. NTSSA, like AIR 21, explicitly permits the Secretary to order the respondent to ''take affirmative action to abate the violation.'' 6 U.S.C. 1142(c)(3)(B)(i).

As AAR notes, FRSA contains its own remedies provision, apart from AIR 21's remedies provision. FRSA prescribes remedies to make the employee whole, 49 U.S.C. 20109(e), notwithstanding FRSA's incorporation of the ''rules and procedures'' of AIR 21, 49 U.S.C. 20109(d)(2)(A). OSHA believes that injunctive relief to abate a violation of a specific employee's rights can be an important element of making the employee whole. Such relief could include, for example, an order requiring a railroad carrier to expunge certain records from an employee's personnel file or an order requiring that a particular company policy not be applied to an employee where application of the policy would penalize the employee for having engaged in protected activity. The posting of a notice to employees regarding the resolution of a whistleblower complaint can be important to remedying the reputational harm an employee has suffered as a result of retaliation. In some instances, an order to provide training to managers or notice to employees regarding the rights protected by the statute at issue can assist in making the employee whole by ensuring that the circumstances that led to retaliation do not persist, thus remedying the employee's fear of future retaliation for having engaged in the protected activity that gave rise to employee's whistleblower complaint. Therefore, while OSHA is cognizant of the textual differences between NTSSA and FRSA, it has made no change in response to this comment to the text of 1982.105, which permits an order of abatement where appropriate.

In addition to the revisions noted above, which clarify the provision of interest on back pay awards and the allocation of back pay to the appropriate calendar quarters or months, minor changes were made as needed to clarify the provision without changing its meaning.

Subpart B—Litigation

Section 1982.106 Objections to the Findings and the Preliminary Order and Requests for a Hearing

To be effective, objections to the findings of the Assistant Secretary must be in writing and must be filed with the Chief Administrative Law Judge, U.S. Department of Labor, Washington, DC 20001 within 30 days of receipt of the findings. The date of the postmark, facsimile transmittal, or electronic communication transmittal is considered the date of the filing; if the objection is filed in person, by hand-delivery or other means, the objection is filed upon receipt. The filing of objections is considered a request for a hearing before an ALJ. Although the parties are directed to serve a copy of their objections on the other parties of record, as well as the OSHA official who issued the findings and order, the Assistant Secretary, and the U.S. Department of Labor's Associate Solicitor for Fair Labor Standards, the failure to serve copies of the objections on the other parties of record does not affect the ALJ's jurisdiction to hear and decide the merits of the case. *See Shirani* v. *Calvert Cliffs Nuclear Power Plant, Inc.,* ARB No. 04–101, 2005 WL 2865915, at * 7 (ARB Oct. 31, 2005).

The timely filing of objections stays all provisions of the preliminary order, except for the portion requiring reinstatement. A respondent may file a motion to stay OSHA's preliminary order of reinstatement with the Office of Administrative Law Judges. However, such a motion will be granted only based on exceptional circumstances. Language was added to paragraph (b) of this section to make this point clear. A stay of the Assistant Secretary's preliminary order of reinstatement under FRSA or NTSSA would be appropriate only where the respondent can establish the necessary criteria for equitable injunctive relief, *i.e.,* irreparable injury, likelihood of success on the merits, a balancing of possible harms to the parties, and the public interest favors a stay. *See Bailey* v. *Consol. Rail Corp.,* ARB Nos. 13–030 13–033, 2013 WL 1385563, at * 2 (ARB Mar. 27, 2013) (discussing the factors for obtaining a stay of reinstatement under FRSA). If no timely objection to OSHA's findings and/or preliminary order is filed, then OSHA's findings and/or preliminary order become the final decision of the Secretary not subject to judicial review.

No comments were received on this section. The term ''electronic communication transmittal'' was substituted for ''email communication'' and other minor changes were made as needed to clarify the provision without changing its meaning.

Section 1982.107 Hearings

This section adopts the rules of practice and procedure for administrative hearings before the Office of Administrative Law Judges at 29 CFR part 18 subpart A. It specifically provides for hearings to be consolidated where both the complainant and respondent object to the findings and/or order of the Assistant Secretary. This section further provides that the hearing is to commence expeditiously, except upon a showing of good cause or unless otherwise agreed to by the parties. Hearings will be conducted de novo, on the record.

In a revision from the interim final rule, paragraph (b) now notes the broad authority of ALJs to limit discovery in order to expedite the hearing. This change was made for consistency with OSHA's rules under other whistleblower statutes, which similarly note that the ALJ has broad authority to limit discovery. *See, e.g.,* 29 CFR 1979.107 (AIR 21); 29 CFR 1980.107 (Sarbanes-Oxley). As with other whistleblower statutes administered by OSHA, FRSA, and NTSSA dictate that hearings ''shall be conducted expeditiously'' and allow complainants to seek de novo review of the complaint in federal court if the Secretary has not issued a final decision within 210 days after the filing of the complaint. *See* 6 U.S.C. 1142(c)(7) and 49 U.S.C. 20109(d)(3). The ALJ's broad discretion to limit discovery, for example by limiting the number of interrogatories, requests for production of documents, or depositions allowed, furthers Congress's intent to provide for expeditious hearings under FRSA and NTSSA.

Finally, this section has been revised to add paragraph (d), which specifies that the formal rules of evidence will not apply to proceedings before an ALJ under section 1982.107, but rules or principles designed to assure the production of the most probative evidence will be applied. The Department has taken the same approach under the other whistleblower statutes administered by OSHA. *See, e.g.,* 29 CFR 1979.107 (AIR 21); 29 CFR 1980.107 (Sarbanes-Oxley). This approach is also consistent with the Administrative Procedure Act, which provides at 5 U.S.C. 556(d): ''Any oral or documentary evidence may be received, but the agency as a matter of policy shall provide for the exclusion of irrelevant, immaterial, or unduly repetitious evidence.'' *See also Federal Trade Comm'n* v. *Cement Inst.,* 333 U.S. 683, 805–06 (1948) (administrative agencies not restricted by rigid rules of evidence). The Secretary believes that it is inappropriate to apply the rules of evidence at 29 CFR part 18 subpart B because whistleblowers often appear pro se and may be disadvantaged by strict adherence to formal rules of evidence. Furthermore, hearsay evidence is often appropriate in whistleblower cases, as there often are no relevant documents or witnesses other than hearsay to prove retaliation ALJs have the responsibility to determine the appropriate weight to be given such evidence. For these reasons, the interests of determining all of the relevant facts are best served by not requiring strict evidentiary rules.

No comments were received on this section, but, as explained above, this section was revised to specify that the formal rules of evidence will not apply to proceedings before an ALJ under this section.

Section 1982.108 Role of Federal Agencies

The Assistant Secretary, at his or her discretion, may participate as a party or amicus curiae at any time in the administrative proceedings under NTSSA or FRSA. For example, the Assistant Secretary may exercise his or her discretion to prosecute the case in the administrative proceeding before an ALJ; petition for review of a decision of an ALJ, including a decision based on a settlement agreement between the complainant and the respondent, regardless of whether the Assistant Secretary participated before the ALJ; or participate as amicus curiae before the ALJ or in the ARB proceeding. Although OSHA anticipates that ordinarily the Assistant Secretary will not participate, the Assistant Secretary may choose to do so in appropriate cases, such as cases involving important or novel legal issues, large numbers of employees, alleged violations which appear egregious, or where the interests of justice might require participation by the Assistant Secretary. The Department of Transportation or the Department of Homeland Security, at each agency's discretion, also may participate as amicus curiae at any time in the proceedings. No comments were received on this section; however, it has been revised to specify that parties need only send documents to OSHA and the Department of Labor's Associate Solicitor for Fair Labor Standards when OSHA requests that documents be sent, OSHA is participating in the proceeding, or service on OSHA is otherwise required by these rules. Other minor changes were made as needed to clarify this provision without changing its meaning.

Section 1982.109 Decision and Orders of the Administrative Law Judge

This section sets forth the requirements for the content of the decision and order of the ALJ, and includes the standard for finding a violation under NTSSA or FRSA. Paragraphs (a) and (b) set forth the burdens of proof that apply to claims under NTSSA and FRSA. Specifically, the complainant must demonstrate (*i.e.* prove by a preponderance of the evidence) that the protected activity was a ''contributing factor'' in the adverse action. *See, e.g., Allen* v. *Admin. Review Bd.,* 514 F.3d 468, 475 n.1 (5th Cir. 2008) (''The term 'demonstrates' [under identical burden-shifting scheme in the Sarbanes-Oxley whistleblower provision] means to prove by a preponderance of the evidence.''). If the employee demonstrates that the alleged protected activity was a contributing factor in the adverse action, the employer, to escape liability, must demonstrate by ''clear and convincing evidence'' that it would have taken the same action in the absence of the protected activity. *See* 6 U.S.C. 1142(c)(2)(B)(iv); 49 U.S.C. 42121(b)(2)(B)(iv). The section further provides that the Assistant Secretary's determination to dismiss the complaint without an investigation or without a complete investigation pursuant to section 1982.104 is not subject to review. Thus, paragraph (c) of section 1982.109 clarifies that the Assistant Secretary's determinations on whether to proceed with an investigation under NTSSA or FRSA and whether to make particular investigative findings under either of the statutes subject to this part are discretionary decisions not subject to review by the ALJ. The ALJ hears cases de novo and, therefore, as a general matter, may not remand cases to the Assistant Secretary to conduct an investigation or make further factual findings. A full discussion of the burdens of proof used by the Department to resolve whistleblower cases under this part is set forth above in the discussion of section 1982.104.

Paragraph (d) notes the remedies that the ALJ may order under NTSSA or FRSA and, as discussed under section 1982.105 above, provides that interest on back pay will be calculated using the interest rate applicable to underpayment of taxes under 26 U.S.C. 6621 and will be compounded daily. Paragraph (d) has also been revised to provide that the respondent will be required to submit appropriate documentation to the Social Security Administration or the Railroad Retirement Board, as appropriate, allocating any back pay award to the appropriate calendar quarters or months.

Paragraph (e) requires that the ALJ's decision be served on all parties to the proceeding, the Assistant Secretary, and the U.S. Department of Labor's Associate Solicitor for Fair Labor Standards. Paragraph (e) also provides that any ALJ decision requiring reinstatement or lifting an order of reinstatement by the Assistant Secretary will be effective immediately upon receipt of the decision by the respondent. All other portions of the ALJ's order will be effective 14 days after the date of the decision unless a timely petition for review has been filed with the Administrative Review Board.

OSHA has revised the period for filing a timely petition for review with the ARB to 14 days rather than 10 business days. With this change, the final rule expresses the time for a petition for review in a way that is consistent with the other deadlines for filings before the ALJs and the ARB in the rule, which are also expressed in days rather than business days. This change also makes the final rule congruent with the 2009 amendments to Rule 6(a) of the Federal Rules of Civil Procedure and Rule 26(a) of the Federal Rules of Appellate Procedure, which govern computation of time before those tribunals and express filing deadlines as days rather than business days. Accordingly, the ALJ's order will become the final order of the Secretary 14 days after the date of the decision, rather than after 10 business days, unless a timely petition for review is filed. As a practical matter, this revision does not substantively alter the window of time for filing a petition for review before the ALJ's order becomes final.

AAR urged OSHA to include in this section a provision permitting an ALJ in a FRSA case to award the employer up to $1,000 in reasonable attorney fees if the ALJ determines that the complaint was frivolous or brought in bad faith. AAR pointed out that FRSA requires that AIR 21 rules and procedures be used in FRSA actions, and that the AIR 21 statute and regulations provide for attorney fees in such circumstances. *See* 49 U.S.C. 20109(d)(2)(A); 49 U.S.C. 42121(b)(3)(C); 29 CFR 1979.109(b). OSHA does not believe that such a provision is warranted under FRSA. FRSA incorporates only the rules and procedures of AIR 21. It does not incorporate the attorney-fee provision from AIR 21. *See Vason* v. *Port Auth. Trans Hudson,* ALJ No. 2010–FRS–00038, at 3–4 (ALJ Dec. 20, 2010) (concluding that AIR 21's attorney fee provision for cases that are frivolous or brought in bad faith is not a ''rule'' or ''procedure'' and therefore FRSA's incorporation of AIR 21's rules and procedures does not incorporate AIR 21's attorney fee provision).

Modifications were made to this section to match the language regarding remedies in 1982.105(a)(1). The statement that the decision of the ALJ will become the final order of the Secretary unless a petition for review is timely filed with the ARB and the ARB accepts the petition for review was deleted from section 1982.110(a) and moved to paragraph (e) of this section. Additional minor changes were made to clarify this provision without changing its meaning.

Section 1982.110 Decision and Orders of the Administrative Review Board

Upon the issuance of the ALJ's decision, the parties have 14 days within which to petition the ARB for review of that decision. If no timely petition for review is filed with the ARB, the decision of the ALJ becomes the final decision of the Secretary and is not subject to judicial review. The date of the postmark, facsimile transmittal, or electronic communication transmittal is considered to be the date of filing of the petition; if the petition is filed in person, by hand-delivery or other means, the petition is considered filed upon receipt.

The appeal provisions in this part provide that an appeal to the ARB is not a matter of right but is accepted at the discretion of the ARB. The parties should identify in their petitions for review the legal conclusions or orders to which they object, or the objections may be deemed waived. The ARB has 30 days to decide whether to grant the petition for review. If the ARB does not grant the petition, the decision of the ALJ becomes the final decision of the Secretary. If a timely petition for review is filed with the ARB, any relief ordered by the ALJ, except for that portion ordering reinstatement, is inoperative while the matter is pending before the ARB. When the ARB accepts a petition for review, the ALJ's factual determinations will be reviewed under the substantial evidence standard. In order to be consistent with the practices and procedures followed in OSHA's other whistleblower programs, and to provide further clarification of the regulatory text, OSHA has modified the language of section 1982.110(c) to clarify when the ALJ proceedings conclude and when the final decision of the ARB will be issued.

This section also provides that, based on exceptional circumstances, the ARB may grant a motion to stay an ALJ's preliminary order of reinstatement under NTSSA or FRSA, which otherwise would be effective, while review is conducted by the ARB. A stay of an ALJ's preliminary order of reinstatement under NTSSA or FRSA would be appropriate only where the respondent can establish the necessary criteria for equitable injunctive relief, *i.e.,* irreparable injury, likelihood of success on the merits, a balancing of possible harms to the parties, and the public interest favors a stay. *See Bailey,* 2013 WL 1385563, at * 2 (discussing the factors for obtaining a stay of reinstatement under FRSA).

If the ARB concludes that the respondent has violated the law, it will order the remedies listed in paragraph (d). Interest on back pay will be calculated using the interest rate applicable to underpayment of taxes under 26 U.S.C. 6621 and will be compounded daily. If the ARB determines that the respondent has not violated the law, an order will be issued denying the complaint. In addition, when back pay is ordered, the respondent will be required to submit appropriate documentation to the Social Security Administration or the Railroad Retirement Board, as appropriate, allocating any back pay award to the appropriate months or calendar quarters. If, upon the request of the respondent, the ARB determines that a complaint filed under NTSSA was frivolous or was brought in bad faith, the ARB may award to the respondent reasonable attorney fees, not exceeding $1,000.

With regard to section 1982.110(a), NWC urged deletion of the provision in the interim final rule that ''[a]ny exception not specifically urged will ordinarily be deemed waived by the parties.'' NWC commented that parties should be allowed to add additional grounds for review in subsequent briefs and that allowing parties to do so would further the goal of deciding cases on the merits. In response, OSHA notes that its inclusion of this provision is not intended to limit the circumstances in which parties can add additional grounds for review as a case progresses before the ARB; rather, the rules include this provision to put the public on notice of the possible consequences of failing to specify the basis of an appeal to the ARB. OSHA recognizes that while the ARB has held in some instances that an exception not specifically urged may be deemed waived, the ARB also has found that the rules provide for exceptions to this general rule. *See, e.g., Furland* v. *American Airlines, Inc.,* ARB Nos. 09–102, 10–130, 2011 WL 3413364, at * 10, n.5 (ARB July 27, 2011) (where complainant consistently made an argument throughout the administrative proceedings the argument was not waived simply because it appeared in complainant's reply brief to the ARB rather than in the petition for review); *Avlon* v. *American Express Co.,* ARB No. 09–089, 2011 WL 4915756, at * 4, * 5, n.1 (ARB Sept. 14, 2011) (consideration of an argument not specifically raised in complainant's petition for review is within the authority of the ARB, and parallel provisions in the Sarbanes-Oxley Act whistleblower regulations do not mandate the ARB limit its review to ALJ conclusions assigned as error in the petition for review). However, recognizing that the interim final rule may have suggested too stringent a standard, OSHA has replaced the phrase ''ordinarily will'' with ''may.'' NWC also suggested that the review period be extended from ten to thirty days to make this section parallel to the provision in 1982.105(c), which allows for thirty days within which to file an objection. OSHA declines to extend the review period to 30 days because a shorter review period is consistent with the practices and procedures followed in OSHA's other whistleblower programs. Furthermore, parties may file a motion for extension of time to appeal an ALJ's decision, and the ARB has discretion to grant such extensions. However, as explained above, OSHA has revised the period to petition for review of an ALJ decision to 14 days rather than 10 business days. As a practical matter, this revision does not substantively alter the window of time for filing a petition for review before the ALJ's order becomes final.

Similarly, section 1982.110(c), which provides that the ARB will issue a final decision within 120 days of the conclusion of the ALJ hearing, was similarly revised to state that the conclusion of the ALJ hearing will be deemed to be 14 days after the date of the decision of the ALJ, rather than after 10 business days, unless a motion for reconsideration has been filed with the ALJ in the interim. Like the revision to section 1982.110(a), this revision does not substantively alter the length of time before the ALJ hearing will be deemed to have been concluded.

In addition to the changes noted above, OSHA moved the statement in paragraph (a) that if no timely petition for review is filed with the ARB, the decision of the ALJ becomes the final decision of the Secretary and is not subject to judicial review to section 1982.109(e) for clarity. Modifications were made paragraph (d) of this section to match the language regarding remedies in section 1982.105(a)(1). Lastly, OSHA has revised this section slightly to clarify that interest on back pay awards will be compounded daily and to make several minor changes to clarify the provision and more closely mirror the language used in the statutes.

Subpart C—Miscellaneous Provisions

Section 1982.111 Withdrawal of Complaints, Findings, Objections, and Petitions for Review; Settlement

This section provides for the procedures and time periods for withdrawal of complaints, the withdrawal of findings and/or preliminary orders by the Assistant Secretary, and the withdrawal of objections to findings and/or orders. It also provides for approval of settlements at the investigative and adjudicative stages of the case.

AAR and Rail Labor both submitted comments relating to settlements. AAR stated that OSHA should not be overly involved in settlements as such involvement could frustrate the parties' ability to reach settlements. In addition, AAR noted that an employee often files a collective bargaining or statutory claim, such as a FELA claim, simultaneously with a FRSA claim. According to AAR, a settlement may resolve all of the employee's claims. OSHA has jurisdiction only over the FRSA claim and therefore cannot review the aspects of the settlement that do not involve the FRSA claim. Rail Labor similarly commented that it is possible that an employee may pursue multiple claims simultaneously. Rail Labor suggested modifying the language in section 1982.111(d) to clarify how a settlement will affect other pending cases and other parties involved in a particular case.

While OSHA recognizes that, in whistleblower cases generally, an employee may have more than one cause of action against the employer, OSHA does not believe that any change in the procedures for handling whistleblower complaints is necessary to accommodate this possibility. NTSSA and FRSA both provide that, at any time before the issuance of a final order of the Secretary, a proceeding before the agency may be terminated on the basis of a settlement ''entered into'' by the Secretary, the complainant, and the respondent. 6 U.S.C. 1142(c)(3)(A); 49 U.S.C. 20109(d)(2)(A); 49 U.S.C. 42121(b)(3)(A). The procedures for submission of settlements to the agency under section 1982.111 implement these statutory requirements to ensure that settlements of whistleblower claims under NTSSA and FRSA are fair, adequate, and reasonable, in the public interest, and that the employee's consent was knowing and voluntary.

The final rule adopts a revision to section 1982.111(a) that permits complainants to withdraw their complaints orally. In such circumstances, OSHA will, in writing, confirm a complainant's desire to withdraw. This revision will reduce burdens on complainants who no longer want to pursue their claims. Other minor changes were made as needed to clarify the provision without changing its meaning.

Section 1982.112 Judicial Review

This section describes the statutory provisions for judicial review of decisions of the Secretary and requires, in cases where judicial review is sought, the ALJ or the ARB to submit the record of proceedings to the appropriate court pursuant to the rules of such court. This section also states that a final order is not subject to judicial review in any criminal or other civil proceeding. NTSSA explicitly provides that ''[a]n order of the Secretary of Labor with respect to which review could have been obtained [in the court of appeals] shall not be subject to judicial review in any criminal or other civil proceeding.'' 6 U.S.C. 1142(c)(4)(B). In addition, the Secretary interprets FRSA as also prohibiting collateral attack on a final order of the Secretary. This interpretation is consistent with well-established case law that, where ''a direct-review statute specifically gives the court of appeals subject-matter jurisdiction to directly review agency action[,]'' district courts do not have federal question jurisdiction. *Watts* v. *Securities and Exchange Comm'n,* 482 F.3d 501, 505 (D.C. Cir. 2007); *see Thunder Basin Coal Co.* v. *Reich,* 510 U.S. 200, 208 (1994) (district court did not have jurisdiction over an action by mine operators challenging an administrative order because the statute only expressly authorized district court jurisdiction in actions by the Secretary and provided for judicial review in the court of appeals); *Sturm, Ruger & Co.* v. *Chao,* 300 F.3d 867, 873 (D.C. Cir. 2002) (dismissing action claiming that Secretary lacked statutory authority to conduct a survey because the action was not one of those over which district courts had jurisdiction under the statute and statute provided for judicial review of agency action in the court of appeals); *Griffith* v. *Fed. Labor Relations Auth.,* 842 F.2d 487, 491 (D.C. Cir. 1988) (district court did not have jurisdiction because, while the statute explicitly authorized district court review of some types of actions, it did not authorize review of the particular action at issue and judicial review was available in the court of appeals). No comments were received on this section. However, minor changes have been made to clarify it.

Section 1982.113 Judicial Enforcement

This section describes the Secretary's authority under NTSSA and FRSA to obtain judicial enforcement of orders and the terms of a settlement agreement.

FRSA expressly authorizes district courts to enforce orders, including preliminary orders of reinstatement, issued by the Secretary under 49 U.S.C. 20109(d)(2)(A) (adopting the rules and procedures set forth in AIR 21, 49 U.S.C. 42121(b)). 49 U.S.C. 20109(d)(2)(A)(iii) (''If a person fails to comply with an order issued by the Secretary of Labor pursuant to the procedures in section 42121(b), the Secretary of Labor may bring a civil action to enforce the order in the district court of the United States for the judicial district in which the violation occurred, as set forth in 42121.''). FRSA permits the Secretary to bring an action to obtain such enforcement. 49 U.S.C. 20109(d)(2)(A)(iii). However, there is no provision in FRSA permitting the person on whose behalf the order was issued to bring such an action.

NTSSA gives district courts authority to enforce orders, including preliminary reinstatement orders, issued by the Secretary. Specifically, reinstatement orders issued under subsection (c)(3) are immediately enforceable in district court under 6 U.S.C. 1142(c)(5) and (6). Subsections (c)(3)(B)(ii) and (d)(2)(A) provide that the Secretary shall order the person who has committed a violation to reinstate the complainant to his or her former position. Subsection (c)(2)(A) instructs the Secretary to accompany any reasonable cause finding that a violation occurred with a preliminary order containing the relief prescribed by subsection (c)(3)(B), which includes reinstatement. 6 U.S.C. 1142(c)(3)(B)(ii) and (d)(2)(A). Subsection (c)(2)(A) also declares that the subsection (c)(3)(B)'s relief of reinstatement contained in a preliminary order is not stayed upon the filing of objections. 6 U.S.C. 1142(c)(2)(A) (''The filing of such objections shall not operate to stay any reinstatement remedy contained in the preliminary order.'') Thus, under the statute, enforceable orders issued under subsection (c)(3)(B) include preliminary orders that contain the relief of reinstatement prescribed by subsection (c)(3)(B) and (d)(2)(A). This statutory interpretation of FRSA and NTSSA is consistent with the Secretary's interpretation of similar language in AIR 21 and Sarbanes-Oxley. *See* Brief for the Secretary of Labor, *Solis* v. *Union Pacific R.R. Co.,* No. 4:12–cv–00304 BLW (D. Id. 2012); Brief for the Intervenor/Plaintiff-Appellee Secretary of Labor, *Solis* v. *Tenn. Commerce Bancorp, Inc.,* No. 10–5602 (6th Cir. 2010); *Solis* v. *Tenn. Commerce Bancorp, Inc.,* 713 F. Supp. 2d 701 (M.D. Tenn. 2010); *but see Bechtel* v. *Competitive Techs., Inc.,* 448 F.3d 469 (2d Cir. 2006); *Solis* v. *Union Pacific R.R. Co.,* No. 4:12–cv–00304 BLW, 2013 WL 440707 (D. Id. Jan. 11, 2013); *Welch* v. *Cardinal Bankshares Corp.,* 454 F. Supp. 2d 552 (W.D. Va. 2006) (*decision vacated, appeal dismissed,* No. 06–2995 (4th Cir. Feb. 20, 2008)). NTSSA also permits the person on whose behalf the order was issued under NTSSA to obtain judicial enforcement of orders and the terms of a settlement agreement.

Rail Labor commented on this provision (it labeled its comment as related to section 1982.112, which addresses judicial review, but it is clear from the substance of the comment that it is related to section 1982.113, which addresses judicial enforcement). Rail Labor disagreed with the statement in the proposal that, under FRSA, the person on whose behalf an order was issued cannot bring an action to enforce such order (only the Secretary can). However, if OSHA's interpretation is correct, Rail Labor expressed concern that the language in section 1982.113 gives unrestricted discretion to OSHA to enforce an order. Therefore, Rail Labor suggested that this section should be modified to clarify that the Secretary will, in all but the most extraordinary circumstances, enforce an order.

OSHA declines to change this section as suggested. FRSA provides that the Secretary may bring an action to enforce an order, such as a preliminary reinstatement order. FRSA also states that an order of preliminary reinstatement will not be stayed during the administrative proceedings, making clear that preliminary reinstatement is the presumptive remedy for retaliation. OSHA does not believe any further explanation of the circumstances in which the Secretary will seek enforcement of an order, such as a preliminary reinstatement order, is necessary in these rules.

OSHA has made two changes to this section that are not intended to have substantive effects. First, OSHA has revised this section to more closely parallel the differing provisions of NTSSA and FRSA regarding the proper venue for enforcement actions. Second, the list of remedies that formerly appeared in this section has been moved to section 1982.114. This revision does not reflect a change in the Secretary's views regarding the remedies that are available under NTSSA and FRSA in an action to enforce an order of the Secretary. The revision has been made to better parallel the statutory structure of NTSSA and FRSA which both contemplate enforcement of a Secretary's order and specify the remedies that are available in an action for de novo review of a retaliation complaint in district court.

Section 1982.114 District Court Jurisdiction of Retaliation Complaints

This section sets forth NTSSA's and FRSA's respective provisions allowing a complainant to bring an original de novo action in district court, alleging the same allegations contained in the complaint filed with OSHA, if there has been no final decision of the Secretary within 210 days of the filing of the complaint and there is no delay due to the complainant's bad faith.

In the Secretary's view, the right to seek de novo review in district court under these provisions terminates when the Secretary issues a final decision, even if the date of the final decision is more than 210 days after the filing of the complaint. The purpose of these ''kick-out'' provisions is to aid the complainant in receiving a prompt decision. That goal is not implicated in a situation where the complainant already has received a final decision from the Secretary. In addition, as previously discussed with regard to § 1982.112 above, permitting the complainant to file a new case in district court in such circumstances would be a collateral attack on the Secretary's final order and, as such, is inconsistent with the provisions providing parties the right to seek judicial review of the Secretary's final decision in the court of appeals.

OSHA has revised paragraph (a) of this section to incorporate the statutory provision allowing a jury trial at the request of either party in a district court action under NTSSA and FRSA. OSHA also has added paragraph (b) to specify the burdens of proof applicable to ''kick out'' actions under this section and the statutory remedies available in those actions. For both NTSSA and FRSA complaints, the same burdens of proof that apply in proceedings before the ALJ, as outlined in section 1982.109, apply to ''kick out'' actions. *See* 6 U.S.C. 1142(c)(7); *Araujo,* 708 F.3d at 157–58 (holding that the burdens of proof in 49 U.S.C. 42121 apply to ''kick out'' actions under FRSA). Paragraph (b) also notes the remedies available to an employee who prevails in an action in district court, which are the same under NTSSA and FRSA. Both NTSSA and FRSA provide that an employee who prevails in an action in district court shall be entitled to all relief necessary to make the employee whole and that remedies shall include reinstatement with the same seniority status that the employee would have had, but for the retaliation, any back pay with interest, and payment of compensatory damages, including compensation for any special damages sustained as a result of the retaliation, including litigation costs, expert witness fees, and reasonable attorney fees. The relief for an employee who prevails in an action in district court under NTSSA or FRSA may also include punitive damages in an amount not to exceed $250,000. *See* 6 U.S.C. 1142 (d); 49 U.S.C. 20109(e).

In paragraph (c) of this section, OSHA eliminated the requirement in the interim final rule that complainants provide the agency 15 days advance notice before filing a de novo complaint in district court. Instead, this section now provides that within seven days after filing a complaint in district court, a complainant must provide a file-stamped copy of the complaint to the Assistant Secretary, the ALJ, or the ARB, depending on where the proceeding is pending. In all cases a copy of the district court complaint also must be provided to the Regional Administrator, the Assistant Secretary, Occupational Safety and Health Administration, and the U.S. Department of Labor's Associate Solicitor for Fair Labor Standards. This provision is necessary to notify the agency that the complainant has opted to file a complaint in district court. This provision is not a substitute for the complainant's compliance with the requirements for service of process of the district court complaint contained in the Federal Rules of Civil Procedure and the local rules of the district court where the complaint is filed.

This change responds to NWC's comment that the 15-day advance notice requirement for filing a suit in district court should be eliminated because it inhibits complainants' access to federal courts. OSHA believes that a provision for notifying the agency of the district court complaint is necessary to avoid unnecessary expenditure of agency resources once a complainant has decided to remove the complaint to federal district court. OSHA believes that the revised provision adequately balances the complainant's interest in ready access to federal court and the agency's interest in receiving prompt notice that the complainant no longer wishes to continue with the administrative proceeding. Other minor changes were made as needed to clarify the provision without changing its meaning.

Section 1982.115 Special Circumstances; Waiver of Rules

This section provides that in circumstances not contemplated by these rules or for good cause the ALJ or the ARB may, upon application and notice to the parties, waive any rule as justice or the administration of NTSSA or FRSA requires.

Rail Labor commented that the waiver provision raises due process concerns and should therefore be deleted. According to Rail Labor, any waiver works to the disadvantage of one party and the advantage of the other party, and it creates a drain on limited agency resources.

OSHA believes that, because these procedural rules cannot cover every conceivable contingency, there may be occasions where certain exceptions to the rules are necessary. OSHA notes that a similar section appears in the regulations for handling complaints under the whistleblower provisions of AIR 21 and Sarbanes-Oxley and that both the ALJs and the ARB have relied upon the rule on occasion. *See, e.g., Haefling* v. *United Parcel Serv.,* ALJ No. 98–STA–6 (ALJ Mar. 23, 1998); *Caimano* v. *Brink's Inc.,* ARB No 97–041, 1997 WL 24368 (ARB Jan 22, 1997). Thus, OSHA has made no changes to this section.

IV. Paperwork Reduction Act

This rule contains a reporting provision (filing a retaliation complaint, section 1982.103) which was previously reviewed and approved for use by the Office of Management and Budget (OMB) under the provisions of the Paperwork Reduction Act of 1995, (Pub. L. 104–13). The assigned OMB control number is 1218–0236.

V. Administrative Procedure Act

The notice and comment rulemaking procedures of section 553 of the Administrative Procedure Act (APA) do not apply ''to interpretative rules, general statements of policy, or rules of agency organization, procedure, or practice.'' (5 U.S.C. 553(b)(A)). This is a rule of agency procedure, practice and interpretation within the meaning of that section. Therefore, publication in the **Federal Register** of a notice of proposed rulemaking and request for comments were not required for these regulations, which provide the procedures for the handling of retaliation complaints and set forth the Secretary's interpretations on certain statutory issues. The Assistant Secretary, however, sought and considered comments to enable the agency to improve the rules by taking into account the concerns of interested persons.

Furthermore, because this rule is procedural and interpretative rather than substantive, the normal requirement of 5 U.S.C. 553(d) that a rule be effective 30 days after publication in the **Federal Register** is inapplicable. The Assistant Secretary also finds good cause to provide an immediate effective date for this final rule. It is in the public interest that the rule be effective immediately so that parties may know what procedures are applicable to pending cases.

VI. Executive Orders 12866 and 13563; Unfunded Mandates Reform Act of 1995; Executive Order 13132

The Department has concluded that this rule is not a ''significant regulatory action'' within the meaning of Executive Order 12866, reaffirmed by Executive Order 13563, because it is not likely to: (1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or Tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in Executive Order 12866. Therefore, no economic impact analysis under Section 6(a)(3)(C) of Executive Order 12866 has been prepared. For the same reason, and because no notice of proposed rulemaking has been published, no statement is required under Section 202 of the Unfunded Mandates Reform Act of 1995, 2 U.S.C. 1532. In any event, this rulemaking is procedural and interpretive in nature and is thus not expected to have a significant economic impact. Finally, this rule does not have ''federalism implications.'' The rule does not have ''substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government'' and therefore is not subject to Executive Order 13132 (Federalism).

VII. Regulatory Flexibility Analysis

The notice and comment rulemaking procedures of Section 553 of the APA do not apply ''to interpretative rules, general statements of policy, or rules of agency organization, procedure, or practice.'' 5 U.S.C. 553(b)(A). Rules that are exempt from APA notice and comment requirements are also exempt from the Regulatory Flexibility Act (RFA). See SBA Office of Advocacy, A Guide for Government Agencies: How to Comply with the Regulatory Flexibility Act, at 9; also found at https://www.sba.gov/advocacy/guide-government-agencies-how-comply-regulatory-flexibility-act. This is a rule of agency procedure, practice, and interpretation within the meaning of 5 U.S.C. 553; and therefore the rule is exempt from both the notice and comment rulemaking procedures of the APA and the requirements under the RFA.

Document Preparation: This document was prepared under the direction and control of the Assistant Secretary, Occupational Safety and Health Administration, U.S. Department of Labor.

List of Subjects in 29 CFR Part 1982

Administrative practice and procedure, Employment, Homeland security, Investigations, Mass transportation, Reporting and recordkeeping requirements, Public transportation, Railroads, Safety, Transportation, Whistleblowing.

Authority and Signature

This document was prepared under the direction and control of David Michaels, Ph.D., MPH, Assistant Secretary of Labor for Occupational Safety and Health.

Signed at Washington, DC, on October 28, 2015.

David Michaels,

Assistant Secretary of Labor for Occupational Safety and Health.

Accordingly, for the reasons set out in the preamble, 29 CFR part 1982 is revised to read as follows:

PART 1982—PROCEDURES FOR THE HANDLING OF RETALIATION COMPLAINTS UNDER THE NATIONAL TRANSIT SYSTEMS SECURITY ACT AND THE FEDERAL RAILROAD SAFETY ACT

Subpart A—Complaints, Investigations, Findings and Preliminary Orders

Sec.

Subpart B—Litigation

Subpart C—Miscellaneous Provisions

Authority: 6 U.S.C. 1142 and 49 U.S.C. 20109; Secretary of Labor's Order 01–2012 (Jan. 18, 2012), 77 FR 3912 (Jan. 25, 2012); Secretary of Labor's Order No. 2–2012 (Oct. 19, 2012), 77 FR 69378 (Nov. 16, 2012).

Subpart A—Complaints, Investigations, Findings and Preliminary Orders

§ 1982.100 Purpose and scope.

(a) This part implements procedures of the National Transit Systems Security Act (NTSSA), 6 U.S.C. 1142, and the Federal Railroad Safety Act (FRSA), 49 U.S.C. 20109, as amended. NTSSA provides for employee protection from retaliation because the employee has engaged in protected activity pertaining to public transportation safety or security (or, in circumstances covered by the statute, the employee is perceived to have engaged or to be about to engage in protected activity). FRSA provides for employee protection from retaliation because the employee has engaged in protected activity pertaining to railroad safety or security (or, in circumstances covered by the statute, the employee is perceived to have engaged or to be about to engage in protected activity), has requested medical or first aid treatment, or has followed orders or a treatment plan of a treating physician. It also protects an employee against delay, denial or interference with first aid or medical treatment for a workplace injury.

(b) This part establishes procedures under NTSSA and FRSA for the expeditious handling of retaliation complaints filed by employees, or by persons acting on their behalf, and sets forth the Secretary's interpretations of NTSSA and FRSA on certain statutory issues. These rules, together with those codified at 29 CFR part 18, set forth the procedures under NTSSA or FRSA for submission of complaints, investigations, issuance of findings and preliminary orders, objections to findings and orders, litigation before administrative law judges, post-hearing administrative review, and withdrawals and settlements.

§ 1982.101 Definitions.

As used in this part:

(a) *Assistant Secretary* means the Assistant Secretary of Labor for Occupational Safety and Health or the person or persons to whom he or she delegates authority under NTSSA or FRSA.

(b) *Business days* means days other than Saturdays, Sundays, and Federal holidays.

(c) *Complainant* means the employee who filed a NTSSA or FRSA complaint or on whose behalf a complaint was filed.

(d) *Employee* means an individual presently or formerly working for, an individual applying to work for, or an individual whose employment could be affected by a public transportation agency or a railroad carrier, or a contractor or subcontractor of a public transportation agency or a railroad carrier.

(e) *FRSA* means Section 1521 of the Implementing Recommendations of the 9/11 Commission Act of 2007, Public Law 110–053, August 3, 2007, as further amended by Public Law 110–432, October, 16, 2008, codified at 49 U.S.C. 20109.

(f) *NTSSA* means Section 1413 of the Implementing Recommendations of the 9/11 Commission Act of 2007, Public Law 110–053, August 3, 2007, codified at 6 U.S.C. 1142.

(g) *OSHA* means the Occupational Safety and Health Administration of the United States Department of Labor.

(h) *Public transportation* means regular, continuing shared-ride surface transportation services that are open to the general public or open to a segment of the general public defined by age, disability, or low income; and does not include: Intercity passenger rail transportation provided by the entity described in chapter 243 (or a successor to such entity); intercity bus service; charter bus service; school bus service; sightseeing service; courtesy shuttle service for patrons of one or more specific establishments; or intra-terminal or intra-facility shuttle services.

(i) *Public transportation agency* means a publicly owned operator of public transportation eligible to receive federal assistance under 49 U.S.C. chapter 53.

(j) *Railroad* means any form of nonhighway ground transportation that runs on rails or electromagnetic guideways, including commuter or other short-haul railroad passenger service in a metropolitan or suburban area and commuter railroad service that was operated by the Consolidated Rail Corporation on January 1, 1979; and high speed ground transportation systems that connect metropolitan areas, without regard to whether those systems use new technologies not associated with traditional railroads; but does not include rapid transit operations in an urban area that are not connected to the general railroad system of transportation.

(k) *Railroad carrier* means a person providing railroad transportation, except that, upon petition by a group of commonly controlled railroad carriers that the Secretary of Transportation determines is operating within the United States as a single, integrated rail system, the Secretary of Transportation may by order treat the group of railroad carriers as a single railroad carrier for purposes of one or more provisions of part A, subtitle V of title 49 and implementing regulations and order, subject to any appropriate conditions that the Secretary of Transportation may impose.

(l) *Respondent* means the person alleged to have violated NTSSA or FRSA.

(m) *Secretary* means the Secretary of Labor or person to whom authority under NTSSA or FRSA has been delegated.

(n) Any future statutory amendments that affect the definition of a term or terms listed in this section will apply in lieu of the definition stated herein.

§ 1982.102 Obligations and prohibited acts.

(a) *National Transit Systems Security Act.* (1) A public transportation agency, contractor, or subcontractor of such agency, or officer or employee of such agency, shall not discharge, demote, suspend, reprimand, or in any other way retaliate against, including but not limited to intimidating, threatening, restraining, coercing, blacklisting, or disciplining, an employee if such retaliation is due, in whole or in part, to the employee's lawful, good faith act done, or perceived by the employer to have been done or about to be done—

(i) To provide information, directly cause information to be provided, or otherwise directly assist in any investigation regarding any conduct which the employee reasonably believes constitutes a violation of any Federal law, rule, or regulation relating to public transportation safety or security, or fraud, waste, or abuse of Federal grants or other public funds intended to be used for public transportation safety or security, if the information or assistance is provided to or an investigation stemming from the provided information is conducted by—

(A) A Federal, State or local regulatory or law enforcement agency (including an office of the Inspector General under the Inspector General Act of 1978 (5 U.S.C. App.; Pub. L. 95–452));

(B) Any Member of Congress, any Committee of Congress, or the Government Accountability Office; or

(C) A person with supervisory authority over the employee or such other person who has the authority to investigate, discover, or terminate the misconduct;

(ii) To refuse to violate or assist in the violation of any Federal law, rule, or regulation relating to public transportation safety or security;

(iii) To file a complaint or directly cause to be brought a proceeding related to the enforcement of this section or to testify in that proceeding;

(iv) To cooperate with a safety or security investigation by the Secretary of Transportation, the Secretary of Homeland Security, or the National Transportation Safety Board; or

(v) To furnish information to the Secretary of Transportation, the Secretary of Homeland Security, the National Transportation Safety Board, or any Federal, State, or local regulatory or law enforcement agency as to the facts relating to any accident or incident resulting in injury or death to an individual or damage to property occurring in connection with public transportation.

(2)(i) A public transportation agency, contractor, or subcontractor of such agency, or officer or employee of such agency, shall not discharge, demote, suspend, reprimand, or in any other way retaliate against, including but not limited to intimidating, threatening, restraining, coercing, blacklisting, or disciplining, an employee for—

(A) Reporting a hazardous safety or security condition;

(B) Refusing to work when confronted by a hazardous safety or security condition related to the performance of the employee's duties, if the conditions described in paragraph (a)(2)(ii) of this section exist; or

(C) Refusing to authorize the use of any safety- or security-related equipment, track, or structures, if the employee is responsible for the inspection or repair of the equipment, track, or structures, when the employee believes that the equipment, track, or structures are in a hazardous safety or security condition, if the conditions described in paragraph (a)(2)(ii) of this section exist.

(ii) A refusal is protected under paragraph (a)(2)(i)(B) and (C) of this section if—

(A) The refusal is made in good faith and no reasonable alternative to the refusal is available to the employee;

(B) A reasonable individual in the circumstances then confronting the employee would conclude that—

(*1*) The hazardous condition presents an imminent danger of death or serious injury; and

(*2*) The urgency of the situation does not allow sufficient time to eliminate the danger without such refusal; and

(C) The employee, where possible, has notified the public transportation agency of the existence of the hazardous condition and the intention not to perform further work, or not to authorize the use of the hazardous equipment, track, or structures, unless the condition is corrected immediately or the equipment, track, or structures are repaired properly or replaced.

(iii) In this paragraph (a)(2), only paragraph (a)(2)(i)(A) shall apply to security personnel, including transit police, employed or utilized by a public transportation agency to protect riders, equipment, assets, or facilities.

(b) *Federal Railroad Safety Act.* (1) A railroad carrier engaged in interstate or foreign commerce, a contractor or a subcontractor of such a railroad carrier, or an officer or employee of such a railroad carrier, may not discharge, demote, suspend, reprimand, or in any other way retaliate against, including but not limited to intimidating, threatening, restraining, coercing, blacklisting, or disciplining, an employee if such retaliation is due, in whole or in part, to the employee's lawful, good faith act done, or perceived by the employer to have been done or about to be done—

(i) To provide information, directly cause information to be provided, or otherwise directly assist in any investigation regarding any conduct which the employee reasonably believes constitutes a violation of any Federal law, rule, or regulation relating to railroad safety or security, or gross fraud, waste, or abuse of Federal grants or other public funds intended to be used for railroad safety or security, if the information or assistance is provided to or an investigation stemming from the provided information is conducted by—

(A) A Federal, State, or local regulatory or law enforcement agency (including an office of the Inspector General under the Inspector General Act of 1978 (5 U.S.C. App.; Public Law 95–452));

(B) Any Member of Congress, any committee of Congress, or the Government Accountability Office; or

(C) A person with supervisory authority over the employee or such other person who has the authority to investigate, discover, or terminate the misconduct;

(ii) To refuse to violate or assist in the violation of any Federal law, rule, or regulation relating to railroad safety or security;

(iii) To file a complaint, or directly cause to be brought a proceeding related to the enforcement of 49 U.S.C. part A of subtitle V or, as applicable to railroad safety or security, 49 U.S.C. chapter 51 or 57, or to testify in that proceeding;

(iv) To notify, or attempt to notify, the railroad carrier or the Secretary of Transportation of a work-related personal injury or work-related illness of an employee;

(v) To cooperate with a safety or security investigation by the Secretary of Transportation, the Secretary of Homeland Security, or the National Transportation Safety Board;

(vi) To furnish information to the Secretary of Transportation, the Secretary of Homeland Security, the National Transportation Safety Board, or any Federal, State, or local regulatory or law enforcement agency as to the facts relating to any accident or incident resulting in injury or death to an individual or damage to property occurring in connection with railroad transportation; or

(vii) To accurately report hours on duty pursuant to 49 U.S.C. chapter 211.

(2)(i) A railroad carrier engaged in interstate or foreign commerce, or an officer or employee of such a railroad carrier, shall not discharge, demote, suspend, reprimand, or in any other way retaliate against, including but not limited to intimidating, threatening, restraining, coercing, blacklisting, or disciplining, an employee for—

(A) Reporting, in good faith, a hazardous safety or security condition;

(B) Refusing to work when confronted by a hazardous safety or security condition related to the performance of the employee's duties, if the conditions described in paragraph (b)(2)(ii) of this section exist; or

(C) Refusing to authorize the use of any safety-related equipment, track, or structures, if the employee is responsible for the inspection or repair of the equipment, track, or structures, when the employee believes that the equipment, track, or structures are in a hazardous safety or security condition, if the conditions described in paragraph (b)(2)(ii) of this section exist.

(ii) A refusal is protected under paragraph (b)(2)(i)(B) and (C) of this section if—

(A) The refusal is made in good faith and no reasonable alternative to the refusal is available to the employee;

(B) A reasonable individual in the circumstances then confronting the employee would conclude that—

(*1*) The hazardous condition presents an imminent danger of death or serious injury; and

(*2*) The urgency of the situation does not allow sufficient time to eliminate the danger without such refusal; and

(C) The employee, where possible, has notified the railroad carrier of the existence of the hazardous condition and the intention not to perform further work, or not to authorize the use of the hazardous equipment, track, or structures, unless the condition is corrected immediately or the equipment, track, or structures are repaired properly or replaced.

(iii) In this paragraph (b)(2), only paragraph (b)(2)(i)(A) shall apply to security personnel employed by a railroad carrier to protect individuals and property transported by railroad.

(3) A railroad carrier or person covered under this section may not:

(i) Deny, delay, or interfere with the medical or first aid treatment of an employee who is injured during the course of employment. If transportation to a hospital is requested by an employee injured during the course of employment, the railroad shall promptly arrange to have the injured employee transported to the nearest hospital where the employee can receive safe and appropriate medical care.

(ii) Discipline, or threaten discipline to, an employee for requesting medical or first aid treatment, or for following orders or a treatment plan of a treating physician, except that—

(A) A railroad carrier's refusal to permit an employee to return to work following medical treatment shall not be considered a violation of FRSA if the refusal is pursuant to Federal Railroad Administration medical standards for fitness of duty or, if there are no pertinent Federal Railroad Administration standards, a carrier's medical standards for fitness for duty.

(B) For purposes of this paragraph, the term ''discipline'' means to bring charges against a person in a disciplinary proceeding, suspend, terminate, place on probation, or make note of reprimand on an employee's record.

§ 1982.103 Filing of retaliation complaints.

(a) *Who may file.* An employee who believes that he or she has been retaliated against in violation of NTSSA or FRSA may file, or have filed by any person on the employee's behalf, a complaint alleging such retaliation.

(b) *Nature of filing.* No particular form of complaint is required. A complaint may be filed orally or in writing. Oral complaints will be reduced to writing by OSHA. If the complainant is unable to file the complaint in English, OSHA will accept the complaint in any language.

(c) *Place of filing.* The complaint should be filed with the OSHA office responsible for enforcement activities in the geographical area where the employee resides or was employed, but may be filed with any OSHA officer or employee. Addresses and telephone numbers for these officials are set forth in local directories and at the following Internet address: *http://www.osha.gov.*

(d) *Time for Filing.* Within 180 days after an alleged violation of NTSSA or FRSA occurs, any employee who believes that he or she has been retaliated against in violation of NTSSA or FRSA may file, or have filed by any person on the employee's behalf, a complaint alleging such retaliation. The date of the postmark, facsimile transmittal, electronic communication transmittal, telephone call, hand-delivery, delivery to a third-party commercial carrier, or in-person filing at an OSHA office will be considered the date of filing. The time for filing a complaint may be tolled for reasons warranted by applicable case law. For example, OSHA may consider the time for filing a complaint equitably tolled if a complainant mistakenly files a complaint with another agency instead of OSHA within 180 days after becoming aware of the alleged violation.

§ 1982.104 Investigation.

(a) Upon receipt of a complaint in the investigating office, OSHA will notify the respondent of the filing of the complaint, of the allegations contained in the complaint, and of the substance of the evidence supporting the complaint. Such materials will be redacted, if necessary, consistent with the Privacy Act of 1974, 5 U.S.C. 552a, and other applicable confidentiality laws. OSHA will also notify the respondent of its rights under paragraphs (b) and (f) of this section and § 1982.110(e). OSHA will provide an unredacted copy of these same materials to the complainant (or the complainant's legal counsel if complainant is represented by counsel), and to the Federal Railroad Administration, the Federal Transit Administration, or the Transportation Security Administration as appropriate.

(b) Within 20 days of receipt of the notice of the filing of the complaint provided under paragraph (a) of this section, the respondent may submit to OSHA a written statement and any affidavits or documents substantiating its position. Within the same 20 days, the respondent may request a meeting with OSHA to present its position.

(c) During the investigation, OSHA will request that each party provide the other parties to the whistleblower complaint with a copy of submissions to OSHA that are pertinent to the whistleblower complaint. Alternatively, if a party does not provide its submissions to OSHA to the other party, OSHA will provide them to the other party (or the party's legal counsel if the party is represented by counsel) at a time permitting the other party an opportunity to respond. Before providing such materials to the other party, OSHA will redact them, if necessary, consistent with the Privacy Act of 1974, 5 U.S.C. 552a, and other applicable confidentiality laws. OSHA will also provide each party with an opportunity to respond to the other party's submissions.

(d) Investigations will be conducted in a manner that protects the confidentiality of any person who provides information on a confidential basis, other than the complainant, in accordance with part 70 of this title.

(e)(1) A complaint will be dismissed unless the complainant has made a prima facie showing that protected activity was a contributing factor in the adverse action alleged in the complaint.

(2) The complaint, supplemented as appropriate by interviews of the complainant, must allege the existence of facts and evidence to make a prima facie showing as follows:

(i) The employee engaged in a protected activity (or, in circumstances covered by NTSSA and FRSA, was perceived to have engaged or to be about to engage in protected activity);

(ii) The respondent knew or suspected that the employee engaged in the protected activity (or, in circumstances covered by NTSSA and FRSA, perceived the employee to have engaged or to be about to engage in protected activity);

(iii) The employee suffered an adverse action; and

(iv) The circumstances were sufficient to raise the inference that the protected activity (or perception thereof) was a contributing factor in the adverse action.

(3) For purposes of determining whether to investigate, the complainant will be considered to have met the required burden if the complaint on its face, supplemented as appropriate through interviews of the complainant, alleges the existence of facts and either direct or circumstantial evidence to meet the required showing, *i.e.,* to give rise to an inference that the respondent knew or suspected that the employee engaged in protected activity (or, in circumstances covered by NTSSA and FRSA, perceived the employee to have engaged or to be about to engage in protected activity), and that the protected activity (or perception thereof) was a contributing factor in the adverse action. The burden may be satisfied, for example, if the complaint shows that the adverse action took place shortly after the protected activity, or at the first opportunity available to the respondent, giving rise to the inference that it was a contributing factor in the adverse action. If the required showing has not been made, the complainant (or the complainant's legal counsel if complainant is represented by counsel) will be so notified and the investigation will not commence.

(4) Notwithstanding a finding that a complainant has made a prima facie showing, as required by this section, further investigation of the complaint will not be conducted if the respondent demonstrates by clear and convincing evidence that it would have taken the same adverse action in the absence of the complainant's protected activity.

(5) If the respondent fails to make a timely response or fails to satisfy the burden set forth in the prior paragraph, OSHA will proceed with the investigation. The investigation will proceed whenever it is necessary or appropriate to confirm or verify the information provided by the respondent.

(f) Prior to the issuance of findings and a preliminary order as provided for in § 1982.105, if OSHA has reasonable cause, on the basis of information gathered under the procedures of this part, to believe that the respondent has violated NTSSA or FRSA and that preliminary reinstatement is warranted, OSHA will contact the respondent (or the respondent's legal counsel if respondent is represented by counsel) to give notice of the substance of the relevant evidence supporting the complainant's allegations as developed during the course of the investigation. This evidence includes any witness statements, which will be redacted to protect the identity of confidential informants where statements were given in confidence; if the statements cannot be redacted without revealing the identity of confidential informants, summaries of their contents will be provided. The complainant will also receive a copy of the materials that must be provided to the respondent under this paragraph. Before providing such materials, OSHA will redact them, if necessary, consistent with the Privacy Act of 1974, 5 U.S.C. 552a, and other applicable confidentiality laws. The respondent will be given the opportunity to submit a written response, to meet with the investigators, to present statements from witnesses in support of its position, and to present legal and factual arguments. The respondent must present this evidence within 10 business days of OSHA's notification pursuant to this paragraph, or as soon afterwards as OSHA and the respondent can agree, if the interests of justice so require.

§ 1982.105 Issuance of findings and preliminary orders.

(a) After considering all the relevant information collected during the investigation, the Assistant Secretary will issue, within 60 days of filing of the complaint, written findings as to whether or not there is reasonable cause to believe that the respondent has retaliated against the complainant in violation of NTSSA or FRSA.

(1) If the Assistant Secretary concludes that there is reasonable cause to believe that a violation has occurred, the Assistant Secretary will accompany the findings with a preliminary order providing relief to the complainant. The preliminary order will include, where appropriate: Affirmative action to abate the violation; reinstatement with the same seniority status that the employee would have had, but for the retaliation; any back pay with interest; and payment of compensatory damages, including compensation for any special damages sustained as a result of the retaliation, including litigation costs, expert witness fees, and reasonable attorney fees. Interest on back pay will be calculated using the interest rate applicable to underpayment of taxes under 26 U.S.C. 6621 and will be compounded daily. The preliminary order will also require the respondent to submit documentation to the Social Security Administration or the Railroad Retirement Board, as appropriate, allocating any back pay award to the appropriate months or calendar quarters. The preliminary order may also require the respondent to pay punitive damages up to $250,000.

(2) If the Assistant Secretary concludes that a violation has not occurred, the Assistant Secretary will notify the parties of that finding.

(b) The findings and, where appropriate, the preliminary order will be sent by certified mail, return receipt requested, to all parties of record (and each party's legal counsel if the party is represented by counsel). The findings and, where appropriate, the preliminary order will inform the parties of the right to object to the findings and/or order and to request a hearing, and of the right of the respondent under NTSSA to request award of attorney fees not exceeding $1,000 from the administrative law judge (ALJ) regardless of whether the respondent has filed objections, if the respondent alleges that the complaint was frivolous or brought in bad faith. The findings and, where appropriate, the preliminary order also will give the address of the Chief Administrative Law Judge, U.S. Department of Labor. At the same time, the Assistant Secretary will file with the Chief Administrative Law Judge a copy of the original complaint and a copy of the findings and/or order.

(c) The findings and any preliminary order will be effective 30 days after receipt by the respondent (or the respondent's legal counsel if the respondent is represented by counsel), or on the compliance date set forth in the preliminary order, whichever is later, unless an objection and/or a request for a hearing has been timely filed as provided at § 1982.106. However, the portion of any preliminary order requiring reinstatement will be effective immediately upon the respondent's receipt of the findings and of the preliminary order, regardless of any objections to the findings and/or the order.

Subpart B—Litigation

§ 1982.106 Objections to the findings and the preliminary order and requests for a hearing.

(a) Any party who desires review, including judicial review, of the findings and preliminary order, or a respondent alleging that the complaint was frivolous or brought in bad faith who seeks an award of attorney fees under NTSSA, must file any objections and/or a request for a hearing on the record within 30 days of receipt of the findings and preliminary order pursuant to § 1982.105. The objections, request for a hearing, and/or request for attorney fees must be in writing and state whether the objections are to the findings, the preliminary order, and/or whether there should be an award of attorney fees. The date of the postmark, facsimile transmittal, or electronic communication transmittal is considered the date of filing; if the objection is filed in person, by hand-delivery or other means, the objection is filed upon receipt. Objections must be filed with the Chief Administrative Law Judge, U.S. Department of Labor, and copies of the objections must be mailed at the same time to the other parties of record, the OSHA official who issued the findings and order, the Assistant Secretary, and the Associate Solicitor, Division of Fair Labor Standards, U.S. Department of Labor.

(b) If a timely objection is filed, all provisions of the preliminary order will be stayed, except for the portion requiring preliminary reinstatement, which will not be automatically stayed. The portion of the preliminary order requiring reinstatement will be effective immediately upon the respondent's receipt of the findings and preliminary order, regardless of any objections to the order. The respondent may file a motion with the Office of Administrative Law Judges for a stay of the Assistant Secretary's preliminary order of reinstatement, which shall be granted only based on exceptional circumstances. If no timely objection is filed with respect to either the findings and/or the preliminary order, the findings or preliminary order will become the final decision of the Secretary, not subject to judicial review.

§ 1982.107 Hearings.

(a) Except as provided in this part, proceedings will be conducted in accordance with the rules of practice and procedure for administrative hearings before the Office of Administrative Law Judges, codified at subpart A of part 18 of this title.

(b) Upon receipt of an objection and request for hearing, the Chief Administrative Law Judge will promptly assign the case to an ALJ who will notify the parties, by certified mail, of the day, time, and place of hearing. The hearing is to commence expeditiously, except upon a showing of good cause or unless otherwise agreed to by the parties. Hearings will be conducted de novo on the record. Administrative Law Judges have broad discretion to limit discovery in order to expedite the hearing.

(c) If both the complainant and the respondent object to the findings and/or order, the objections will be consolidated and a single hearing will be conducted.

(d) Formal rules of evidence will not apply, but rules or principles designed to assure production of the most probative evidence will be applied. The ALJ may exclude evidence that is immaterial, irrelevant, or unduly repetitious.

§ 1982.108 Role of Federal agencies.

(a)(1) The complainant and the respondent will be parties in every proceeding and must be served with copies of all documents in the case. At the Assistant Secretary's discretion, the Assistant Secretary may participate as a party or as amicus curiae at any time at any stage of the proceeding. This right to participate includes, but is not limited to, the right to petition for review of a decision of an ALJ, including a decision approving or rejecting a settlement agreement between the complainant and the respondent.

(2) Parties must send copies of documents to OSHA and to the Associate Solicitor, Division of Fair Labor Standards, U.S. Department of Labor, only upon request of OSHA, or when OSHA is participating in the proceeding, or when service on OSHA and the Associate Solicitor is otherwise required by these rules.

(b) The Department of Homeland Security or the Department of Transportation, if interested in a proceeding, may participate as amicus curiae at any time in the proceeding, at those agencies' discretion. At the request of the interested federal agency, copies of all documents in a case must be sent to the federal agency, whether or not the agency is participating in the proceeding.

§ 1982.109 Decision and orders of the administrative law judge.

(a) The decision of the ALJ will contain appropriate findings, conclusions, and an order pertaining to the remedies provided in paragraph (d) of this section, as appropriate. A determination that a violation has occurred may be made only if the complainant has demonstrated by a preponderance of the evidence that protected activity was a contributing factor in the adverse action alleged in the complaint.

(b) If the complainant has satisfied the burden set forth in the prior paragraph, relief may not be ordered if the respondent demonstrates by clear and convincing evidence that it would have taken the same adverse action in the absence of any protected activity.

(c) Neither OSHA's determination to dismiss a complaint without completing an investigation pursuant to § 1982.104(e) nor OSHA's determination to proceed with an investigation is subject to review by the ALJ, and a complaint may not be remanded for the completion of an investigation or for additional findings on the basis that a determination to dismiss was made in error. Rather, if there otherwise is jurisdiction, the ALJ will hear the case on the merits or dispose of the matter without a hearing if the facts and circumstances warrant.

(d)(1) If the ALJ concludes that the respondent has violated the law, the ALJ will issue an order that will include, where appropriate: Affirmative action to abate the violation; reinstatement with the same seniority status that the employee would have had, but for the retaliation; any back pay with interest; and payment of compensatory damages, including compensation for any special damages sustained as a result of the retaliation, including litigation costs, expert witness fees, and reasonable attorney fees. Interest on back pay will be calculated using the interest rate applicable to underpayment of taxes under 26 U.S.C. 6621 and will be compounded daily. The order will also require the respondent to submit documentation to the Social Security Administration or the Railroad Retirement Board, as appropriate, allocating any back pay award to the appropriate months or calendar quarters. The order may also require the respondent to pay punitive damages up to $250,000.

(2) If the ALJ determines that the respondent has not violated the law, an order will be issued denying the complaint. If, upon the request of the respondent, the ALJ determines that a complaint filed under NTSSA was frivolous or was brought in bad faith, the ALJ may award to the respondent a reasonable attorney fee, not exceeding $1,000.

(e) The decision will be served upon all parties to the proceeding, the Assistant Secretary, and the Associate Solicitor, Division of Fair Labor Standards, U.S. Department of Labor. Any ALJ's decision requiring reinstatement or lifting an order of reinstatement by the Assistant Secretary will be effective immediately upon receipt of the decision by the respondent. All other portions of the ALJ's order will be effective 14 days after the date of the decision unless a timely petition for review has been filed with the Administrative Review Board (ARB), U.S. Department of Labor. The decision of the ALJ will become the final order of the Secretary unless a petition for review is timely filed with the ARB and the ARB accepts the petition for review.

§ 1982.110 Decision and orders of the Administrative Review Board.

(a) Any party desiring to seek review, including judicial review, of a decision of the ALJ, or a respondent alleging that the complaint under NTSSA was frivolous or brought in bad faith who seeks an award of attorney fees, must file a written petition for review with the ARB, which has been delegated the authority to act for the Secretary and issue final decisions under this part. The parties should identify in their petitions for review the legal conclusions or orders to which they object, or the objections may be deemed waived. A petition must be filed within 14 days of the date of the decision of the ALJ. The date of the postmark, facsimile transmittal, or electronic communication transmittal will be considered to be the date of filing; if the petition is filed in person, by hand-delivery or other means, the petition is considered filed upon receipt. The petition must be served on all parties and on the Chief Administrative Law Judge at the time it is filed with the ARB. Copies of the petition for review must be served on the Assistant Secretary, and on the Associate Solicitor, Division of Fair Labor Standards, U.S. Department of Labor.

(b) If a timely petition for review is filed pursuant to paragraph (a) of this section, the decision of the ALJ will become the final order of the Secretary unless the ARB, within 30 days of the filing of the petition, issues an order notifying the parties that the case has been accepted for review. If a case is accepted for review, the decision of the ALJ will be inoperative unless and until the ARB issues an order adopting the decision, except that any order of reinstatement will be effective while review is conducted by the ARB, unless the ARB grants a motion by the respondent to stay that order based on exceptional circumstances. The ARB will specify the terms under which any briefs are to be filed. The ARB will review the factual determinations of the ALJ under the substantial evidence standard. If no timely petition for review is filed, or the ARB denies review, the decision of the ALJ will become the final order of the Secretary. If no timely petition for review is filed, the resulting final order is not subject to judicial review.

(c) The final decision of the ARB will be issued within 120 days of the conclusion of the hearing, which will be deemed to be 14 days after the date of the decision of the ALJ, unless a motion for reconsideration has been filed with the ALJ in the interim. In such case, the conclusion of the hearing is the date the motion for reconsideration is denied or 14 days after a new decision is issued. The ARB's final decision will be served upon all parties and the Chief Administrative Law Judge by mail. The final decision also will be served on the Assistant Secretary, and on the Associate Solicitor, Division of Fair Labor Standards, U.S. Department of Labor, even if the Assistant Secretary is not a party.

(d) If the ARB concludes that the respondent has violated the law, the ARB will issue a final order providing relief to the complainant. The final order will include, where appropriate: Affirmative action to abate the violation; reinstatement with the same seniority status that the employee would have had, but for the retaliation; any back pay with interest; and payment of compensatory damages, including compensation for any special damages sustained as a result of the retaliation, including litigation costs, expert witness fees, and reasonable attorney fees. Interest on back pay will be calculated using the interest rate applicable to underpayment of taxes under 26 U.S.C. 6621 and will be compounded daily. The order will also require the respondent to submit documentation to the Social Security Administration or the Railroad Retirement Board, as appropriate, allocating any back pay award to the appropriate months or calendar quarters. The order may also require the respondent to pay punitive damages up to $250,000.

(e) If the ARB determines that the respondent has not violated the law, an order will be issued denying the complaint. If, upon the request of the respondent, the ARB determines that a complaint under NTSSA was frivolous or was brought in bad faith, the ARB may award to the respondent reasonable attorney fees, not exceeding $1,000.

Subpart C—Miscellaneous Provisions

§ 1982.111 Withdrawal of complaints, findings, objections, and petitions for review; settlement.

(a) At any time prior to the filing of objections to the Assistant Secretary's findings and/or preliminary order, a complainant may withdraw his or her complaint by notifying OSHA, orally or in writing, of his or her withdrawal. OSHA then will confirm in writing the complainant's desire to withdraw and determine whether to approve the withdrawal. OSHA will notify the parties (or each party's legal counsel if the party is represented by counsel) of the approval of any withdrawal. If the complaint is withdrawn because of settlement, the settlement must be submitted for approval in accordance with paragraph (d) of this section. A complainant may not withdraw his or her complaint after the filing of objections to the Assistant Secretary's findings and/or preliminary order.

(b) The Assistant Secretary may withdraw the findings and/or preliminary order at any time before the expiration of the 30-day objection period described in § 1982.106, provided that no objection has been filed yet, and substitute new findings and/or a new preliminary order. The date of the receipt of the substituted findings or order will begin a new 30-day objection period.

(c) At any time before the Assistant Secretary's findings and/or order become final, a party may withdraw its objections to the Assistant Secretary's findings and/or order by filing a written withdrawal with the ALJ. If the case is on review with the ARB, a party may withdraw its petition for review of an ALJ's decision at any time before that decision becomes final by filing a written withdrawal with the ARB. The ALJ or the ARB, as the case may be, will determine whether to approve the withdrawal of the objections or the petition for review. If the ALJ approves a request to withdraw objections to the

Assistant Secretary's findings and/or order, and there are no other pending objections, the Assistant Secretary's findings and/or order will become the final order of the Secretary. If the ARB approves a request to withdraw a petition for review of an ALJ decision, and there are no other pending petitions for review of that decision, the ALJ's decision will become the final order of the Secretary. If objections or a petition for review are withdrawn because of settlement, the settlement must be submitted for approval in accordance with paragraph (d) of this section.

(d)(1) *Investigative settlements.* At any time after the filing of a complaint, and before the findings and/or order are objected to or become a final order by operation of law, the case may be settled if OSHA, the complainant, and the respondent agree to a settlement. OSHA's approval of a settlement reached by the respondent and the complainant demonstrates OSHA's consent and achieves the consent of all three parties.

(2) *Adjudicatory settlements.* At any time after the filing of objections to the Assistant Secretary's findings and/or order, the case may be settled if the participating parties agree to a settlement and the settlement is approved by the ALJ if the case is before the ALJ, or by the ARB if the ARB has accepted the case for review. A copy of the settlement will be filed with the ALJ or the ARB, as the case may be.

(e) Any settlement approved by OSHA, the ALJ, or the ARB will constitute the final order of the Secretary and may be enforced in United States district court pursuant to § 1982.113.

§ 1982.112 Judicial review.

(a) Within 60 days after the issuance of a final order under §§ 1982.109 and 1982.110, any person adversely affected or aggrieved by the order may file a petition for review of the order in the United States Court of Appeals for the circuit in which the violation allegedly occurred or the circuit in which the complainant resided on the date of the violation.

(b) A final order is not subject to judicial review in any criminal or other civil proceeding.

(c) If a timely petition for review is filed, the record of a case, including the record of proceedings before the ALJ, will be transmitted by the ARB or the ALJ, as the case may be, to the appropriate court pursuant to the Federal Rules of Appellate Procedure and the local rules of such court.

§ 1982.113 Judicial enforcement.

(a) Whenever any person has failed to comply with a preliminary order of reinstatement, or a final order, including one approving a settlement agreement, issued under NTSSA, the Secretary may file a civil action seeking enforcement of the order in the United States district court for the district in which the violation was found to have occurred. Whenever any person has failed to comply with a preliminary order of reinstatement, or a final order, including one approving a settlement agreement, issued under NTSSA, a person on whose behalf the order was issued may file a civil action seeking enforcement of the order in the appropriate United States district court.

(b) Whenever a person has failed to comply with a preliminary order of reinstatement, or a final order, including one approving a settlement agreement, issued under FRSA, the Secretary may file a civil action seeking enforcement of the order in the United States district court for the district in which the violation was found to have occurred.

§ 1982.114 District court jurisdiction of retaliation complaints.

(a) If there is no final order of the Secretary, 210 days have passed since the filing of the complaint, and there is no showing that there has been delay due to the bad faith of the complainant, the complainant may bring an action at law or equity for de novo review in the appropriate district court of the United States, which will have jurisdiction over such an action without regard to the amount in controversy. At the request of either party, the action shall be tried by the court with a jury.

(b) A proceeding under paragraph (a) of this section shall be governed by the same legal burdens of proof specified in § 1982.109. An employee prevailing in a proceeding under paragraph (a) shall be entitled to all relief necessary to make the employee whole, including, where appropriate: Reinstatement with the same seniority status that the employee would have had, but for the retaliation; any back pay with interest; and payment of compensatory damages, including compensation for any special damages sustained as a result of the retaliation, including litigation costs, expert witness fees, and reasonable attorney fees. The court may also order punitive damages in an amount not to exceed $250,000.

(c) Within 7 days after filing a complaint in federal court, a complainant must file with the Assistant Secretary, the ALJ, or the ARB, depending upon where the proceeding is pending, a copy of the file-stamped complaint. In all cases, a copy of the complaint must also be served on the OSHA official who issued the findings and/or preliminary order, the Assistant Secretary, and the Associate Solicitor, Division of Fair Labor Standards, U.S. Department of Labor.

§ 1982.115 Special circumstances; waiver of rules.

In special circumstances not contemplated by the provisions of these rules, or for good cause shown, the ALJ or the ARB on review may, upon application, after three-days notice to all parties, waive any rule or issue such orders that justice or the administration of NTSSA or FRSA requires.

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 660

[Docket No. 150721634–5999–02]

RIN 0648–BF11

Magnuson-Stevens Act Provisions; Fisheries Off West Coast States; Pacific Coast Groundfish Fishery; Process for Divestiture of Excess Quota Shares in the Individual Fishing Quota Fishery

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Final rule.

SUMMARY: In January 2011, NMFS implemented the trawl rationalization program (a catch share program) for the Pacific coast groundfish limited entry trawl fishery. The program was implemented through Amendment 20 to the Pacific Coast Groundfish Fishery Management Plan (FMP) and the corresponding implementing regulations. Amendment 20 established the trawl rationalization program, which includes an Individual Fishing Quota program for limited entry trawl participants. Under current regulations, quota share permit owners must divest quota share holdings that exceed accumulation limits by November 30, 2015. This final rule makes narrow procedural additions to regulations to clarify how divestiture and revocation of excess quota share will occur in November 2015, and establishes procedures for the future if divestiture becomes necessary.

DATES: Effective November 4, 2015.

ADDRESSES: NMFS prepared a Final Regulatory Flexibility Analysis (FRFA), which is summarized in the Classification section of this final rule. NMFS also prepared an Initial Regulatory Flexibility Analysis (IRFA) for the proposed rule. Copies of the IRFA, FRFA and the Small Entity Compliance Guide are available from William W. Stelle, Jr., Regional Administrator, West Coast Region, NMFS, 7600 Sand Point Way NE., Seattle, WA 98115–0070; or by phone at 206–526–6150. Copies of the Small Entity Compliance Guide are available on the West Coast Region's Web site at *http://www.westcoast.fisheries.noaa.gov/.* Written comments regarding the burden-hour estimates or other aspects of the collection-of-information requirements contained in this final rule may be submitted to the West Coast Region and by email to *OIRA_Submission@omb.eop.gov,* or fax to (202) 395–7285.

FOR FURTHER INFORMATION CONTACT: Sarah Towne, 206–526–4140, *sarah.towne@noaa.gov.*

SUPPLEMENTARY INFORMATION:

Background

NMFS implemented a trawl rationalization program in 2011 for the Pacific coast groundfish limited entry trawl fishery. Amendment 20 to the FMP established the program and was approved in 2010 and implemented through two rulemakings: the first published on October 1, 2010 (75 FR 60868) and implemented the initial quota share allocations; the second published December 15, 2010 (75 FR 78344).

The shorebased trawl sector is managed under an individual fishing quota (IFQ) program where quota share (QS) permit owners hold QS and individual bycatch quota (IBQ) shares for up to 30 IFQ species. Current regulations set accumulation limits on the amount of QS or IBQ that a person, individually or collectively, may own or control in the shorebased IFQ program. There are individual control limits for each of the 30 IFQ species, as well as an aggregate nonwhiting control limit across species. Consistent with the trawl rationalization program, some QS permit owners were initially allocated an amount of QS and/or IBQ that exceeded one or more of the control limits, based on their catch history during the qualifying years. The regulations provide these QS permit owners an adjustment period to hold the excess shares, but they must completely divest of any excess QS or IBQ by November 30, 2015. For any QS permit owner who does not divest of his excess shares by the deadline, the regulations specify that NMFS will revoke his excess QS or IBQ and redistribute it to other QS permit owners in proportion to their current QS or IBQ holdings, up to the control limits.

This action adds the revocation protocols for cases where QS permit owners do not voluntarily divest of QS holdings in excess of the control limits by the divestiture deadline, adds an option where QS permit owners who exceed the aggregate nonwhiting control limit can abandon excess QS to NMFS, and establishes procedures if divestiture becomes necessary in 2016 and beyond.

NMFS published a proposed rule for this action on September 2, 2015 (80 FR 53088). The preamble to the proposed rule provides more background and information on accumulation limits and divestiture, and describes the method for revoking and redistributing QS in excess of the accumulation limits after the divestiture deadline, as well as the method and deadline for abandonment, which are not repeated here.

Response to Comments

The comment period on the proposed rule ended on October 2, 2015. NMFS received two comment letters, one from a processors' association and one from a harvester/processor company. The first letter addressed the proposed abandonment procedure. The second letter opposed the process for proportional revocation and redistribution of excess QS and requested that NMFS retract and reevaluate the aggregate control limit that was adopted in 2010 as part of Amendment 20. Comments from both letters are addressed below.

Comment 1: The commenter supported the proposed QS abandonment option for permit owners over the aggregate nonwhiting control limit, but requested that NMFS add an abandonment option for those cases where a permit owner exceeds one or more individual species control limits across multiple permits. The commenter noted that such an option would be simpler and provide more flexibility than the proportional reduction method described in the proposed rule, and would create less work for NMFS while still meeting the objective of ownership caps.

Response: Under the existing regulations, QS permit owners who exceed an individual species control limit across multiple permits have the ability to divest themselves of individual species shares presently, and if they do not divest by the deadline, NMFS will only revoke excess shares of that species. Thus there is no need to provide an option for abandonment at the individual species level. On the other hand, if a QS permit owner who exceeds the aggregate nonwhiting control limit does not divest by the deadline, NMFS will revoke some shares of each non-widow species contributing to the aggregate calculation, up to 27 species (revocation of widow species will not occur until widow reallocation is complete). NMFS agrees with the Pacific Fishery Management Council (Council) that an abandonment option for the aggregate nonwhiting control limit is appropriate because proportional reduction of 27 species would be cumbersome, and could result in high value species being automatically revoked, while divestiture of an individual species, whether across multiple QS permits or not, does not necessitate an abandonment option.

Comment 2: The commenter supported the proposed notification process for QS permit owners who may exceed an accumulation limit in 2016 and beyond, but asked NMFS to consider a deadline longer than 60 days.

Response: NMFS agrees and has modified the final rule to implement a 90-day deadline for divestiture if NMFS determines that a QS permit owner exceeds an accumulation limit in 2016 or beyond (instead of the 60-day deadline in the proposed rule). In addition, if a QS permit owner was found to exceed the control limit for aggregate nonwhiting holdings in 2016 or beyond, the QS permit owner may abandon QS to NMFS within 60 days of notification by NMFS (instead of the 30-day deadline in the proposed rule).

Comment 3: The commenter asked NMFS to reconsider the proportional revocation of QS at the individual species level and across multiple QS permits because it is unfair, inefficient, and unaligned with conservation goals. The commenter also opposed proportional revocation for the aggregate nonwhiting control limit. The commenter asserted that proportional revocation is inconsistent with the Magnuson-Stevens Act (MSA) and the Administrative Procedure Act (APA).

Response: Revocation of QS or IBQ in excess of the accumulation limits was approved and implemented under Amendment 20 and is beyond the scope of this rulemaking. This rulemaking adds specifics for revocation when a QS permit owner exceeds a control limit across multiple permits or exceeds the aggregate nonwhiting control limit. If a QS permit owner exceeds an individual species control limit in just one QS permit, NMFS will revoke excess QS or

IBQ at the species level. There will be no proportional method necessary, just a simple revocation of the excess amount. However, if a QS permit owner exceeds an individual species control limit across multiple permits after the divestiture deadline, under this rulemaking NMFS will revoke QS or IBQ for that species from each permit contributing to the overage, in proportion to the amount the QS percentage from each permit contributes to the total QS percentage owned. If a QS permit owner exceeds the aggregate nonwhiting control limit after the divestiture deadline, under this rulemaking NMFS will revoke QS at the species level in proportion to the amount of the aggregate overage divided by the aggregate total owned.

Proportional revocation will only be used in cases where QS permit owners do not voluntarily divest of their excess QS or IBQ by the divestiture deadline, whether across multiple permits or at the aggregate nonwhiting control limit level. The choice is completely in the hands of participants: Sell or trade or otherwise divest by the deadline, or excess QS or IBQ across multiple permits or above the aggregate nonwhiting control limit will be revoked proportionally.

By the November 30, 2015 divestiture deadline, QS permit owners initially allocated excess shares could have held excess QS or IBQ for nearly 5 years (the IFQ program began on January 11, 2011) and will have had nearly 2 years to divest of excess shares (QS trading began on January 1, 2014). NMFS agrees with the Council that proportional revocation is a fair method to revoke QS or IBQ after the divestiture deadline, whether across multiple permits or if someone exceeds the aggregate nonwhiting control limit.

Comment 4: The commenter asserted that the proportional redistribution of abandoned or revoked QS to all other QS permit owners is economically inefficient, harmful to conservation goals, and reduces the fishery's ability to harvest the optimum yield. They also state that NMFS should have considered how proportional redistribution satisfies the objectives of MSA, the Fishery Ecosystem Plan (FEP), and Amendments 20 and 21 to the Pacific Coast Groundfish FMP. In addition, they suggest that NMFS should auction abandoned or revoked QS.

Response: Proportional redistribution was approved and implemented under Amendment 20 and is beyond the scope of this rulemaking. If excess QS is abandoned to NMFS by the abandonment deadline (in the case of QS in excess of the aggregate nonwhiting control limit), or if QS or IBQ is revoked by NMFS after the divestiture deadline, NMFS will redistribute the abandoned or revoked QS or IBQ to all other QS permit owners in proportion to their current share holdings. Proportional redistribution of abandoned or revoked QS or IBQ will only be used in cases where QS permit owners choose to abandon QS or do not voluntarily divest of their excess QS or IBQ by the divestiture deadline. The choice is completely in the hands of participants to sell or trade or otherwise divest excess QS or IBQ prior to the divestiture deadline, abandon excess QS to NMFS for species of their choosing if they are over the aggregate nonwhiting control limit, and/or have excess QS or IBQ revoked by NMFS if they do not divest by the divestiture deadline. NMFS agrees with the Council that proportional redistribution of abandoned or revoked excess QS or IBQ to current QS permit owners is a fair outcome.

The implementation of an auction for abandoned or revoked QS is also outside of the scope of this rulemaking. This is an administrative rule to add to existing procedures for the revocation and redistribution of excess QS after the divestiture deadline. While NMFS agrees that an auction for revocation and redistribution of QS or IBQ in 2016 or beyond may be worthy of consideration, this proposal needs to make its way through the Council process. The commenter can choose to participate in the 5-year review to pursue this issue. (The response to Comment 6 provides more information about how to participate in the 5-year review.)

Comment 5: The commenter asserted that NMFS' decision to proceed with the existing divestiture deadline of November 30, 2015, instead of delaying divestiture until after the widow rockfish reallocation, is unreasonable and violates the MSA and the APA because NMFS did not address that decision in the proposed rule.

Response: NMFS brought this issue with several alternatives to the Council for consideration in November 2014 and April 2015 (see the November 2014 Agenda Item J.2.b NMFS Report; the November 2014 Agenda Item J.2.b Supplemental NMFS Report 2; and the April 2015 Agenda Item E.6.a NMFS Report). After much Council-level discussion of the alternatives for delaying both the individual and aggregate control limits until after the widow reallocation, the Council did not modify its original decision and the divestiture requirement and deadline remain in place, with widow rockfish excluded until reallocation is complete. All participants have been on notice about the divestiture requirement since 2010, and many have been planning how to divest or have already divested down to the control limits. Because the reallocation of widow rockfish will only affect one IFQ species, it is not overly complicated to exclude widow rockfish from the divestiture deadline and address divestiture of that species as part of the widow reallocation process.

Comment 6: The commenter asserted that the aggregate control limit of 2.7% for the nonwhiting, shorebased groundfish fishery established under Amendment 20 in 2010 violates the APA, MSA and the National Environmental Policy Act (NEPA) and requested that NMFS retract and properly evaluate the aggregate nonwhiting control limit in a manner consistent with all laws.

Response: The aggregate control limit of 2.7% for the nonwhiting, shorebased groundfish fishery was approved by NMFS in 2010 and is beyond the scope of this rulemaking, which addresses final implementation aspects of the control limits. Further, NMFS does not agree that the 2.7% nonwhiting control limit violates applicable law and should be retracted. The MSA requires specification of maximum shares, expressed as a percentage of the total limited access privileges, which a limited access privilege holder is permitted to hold, acquire, or use, such that no privilege holder may acquire an excessive share of the total privileges in the program. This requirement is similar to National Standard 4, which requires fair and equitable allocations that are reasonably calculated to promote conservation and carried out so no individual or entity acquires an excessive share of the privileges. The Council, including its advisory committees, considered over several years various options and analyses in developing the control limits that were ultimately approved by NMFS in 2010. The accumulation limits were developed based on a review of past participation in the fishery, available policy guidance on excessive shares and market control, and the concept of distributing quota and fishing activity among more participants in order to address concerns such as community impacts and the program's potential effects on new entrants. The choice of the control limits represents a balance between these sometimes competing interests.

No comments specific to the aggregate control limit of 2.7% for the nonwhiting, shorebased groundfish fishery were submitted to NMFS during the 2010 rulemaking to implement the program. As discussed above, all participants have been aware of the control limits and the requirement to divest since 2010. One of the significant issues for the Council and NMFS was whether, once the required accumulation limits were adopted, there should be an adjustment period for participants who owned or controlled excess QS. The Council adopted and NMFS approved a divestiture period to occur during years 3 and 4 of the program, after considerable discussion and public comment. The divestiture period was extended due to unrelated litigation that resulted in reconsideration of the initial allocation of Pacific whiting because the agency and Council determined that no transfers of Pacific whiting shares should occur until resolution of the initial allocation. Thus, participants have had nearly 5 years to prepare for this divestiture requirement.

The Council and NMFS have initiated a 5-year review of the trawl rationalization program. If the commenter wishes that this program review include an examination of the impacts and appropriateness of the nonwhiting aggregate control limit, the commenter should participate in the program review. The 5-year review is next scheduled for discussion at the Council level at the June 23–28, 2016, meeting in Tacoma, WA. The commenter may submit a comment for the 5-year program review to the open comment section of the briefing book for any Council meeting prior to June 2016, or may submit a comment to the briefing book under the trawl rationalization program five-year review agenda item for the June 2016 Council meeting.

Changes From the Proposed Rule

In response to comments, NMFS changed the deadline to divest in 2016 or beyond from 60 days from the date of notification by NMFS to 90 days from the date of notification by NMFS. Linked with this deadline change, NMFS also changed the deadline to abandon QS in excess of the aggregate nonwhiting control limit from 30 days from the date of notification by NMFS to 60 days from the date of notification by NMFS, to provide more time for QS permit owners to determine if they would like to use the abandonment option.

Classification

Pursuant to sections 304(b)(1)(a) and 305(d) of the Magnuson-Stevens Act, the NMFS Assistant Administrator has determined that this final rule is consistent with the Pacific Coast Groundfish FMP, the Magnuson-Stevens Act, and other applicable law.

The need to implement these measures in a timely manner constitutes good cause under authority contained in 5 U.S.C. 553(d)(3) to waive the thirty day waiting period and make the rule effective immediately upon filing for public inspection by the Office of the Federal Register. It would be impractical to have to wait thirty days before the rule is effective because all QS permit owners must be made aware of the clarified divestiture protocols in this final rule prior to the November 30, 2015 divestiture deadline. There is also a public interest need to implement this action immediately to allow QS permit owners who exceed the aggregate nonwhiting control limit the ability and flexibility to abandon excess QS of the species of their choosing to NMFS by the November 15, 2015 deadline. Otherwise NMFS will revoke excess QS for these permit owners according to the procedures established in this rule. Finally, the final rule only makes minor procedural modifications to clarify existing divestiture and revocation regulations.

This final rule has been determined to be not significant for purposes of Executive Order 12866.

A final regulatory flexibility analysis (FRFA) was prepared. The FRFA incorporates the initial regulatory flexibility analysis (IRFA), a summary of the significant issues raised by the public comments in response to the IRFA, and NMFS responses to those comments, and a summary of the analyses completed to support the action are addressed below. NMFS also prepared a Regulatory Impact Review (RIR) for this action. A copy of the RIR/FRFA is available from NMFS (see **ADDRESSES**). A summary of the FRFA, per the requirements of 5 U.S.C. 604(a) follows:

NMFS, pursuant to section 604 of the Regulatory Flexibility Act, has prepared a FRFA. The FRFA incorporates the initial regulatory flexibility analysis (IRFA) prepared for the proposed rule and proposed specifications. The analysis in the IRFA is not repeated here in its entirety. A description of the action, why it is being considered, and the legal basis for this action are contained in the **SUPPLEMENTARY INFORMATION** Background section of the preamble and in the preamble of the proposed rule.

NMFS did not receive any comments on the IRFA. This final rule will affect small entities. There are 138 quota shareholders potentially directly affected by the aggregate species limits as reductions of excess shares will be taken from the quota share percentages listed on the permit. At the first level of ownership and based on affiliations, there are 96 unique businesses. Even if some first-level owners are persons, they are considered businesses for purposes for determining the effects on small businesses. These QS holders must direct quota pounds to various vessel accounts so that quota pounds can be fished. Quite frequently they also own limited entry permits, the vessels attached to these permits, or processing facilities. As compared to secondary owners or investors, first-level quota shareholders are active participants in the fishery, and thus are businesses for purposes of this rule. Also, when renewing their quota share permits, all quota shareholders must respond to questions of whether they consider themselves a large or small business. All 138 quota shareholders are businesses. Of these businesses, 15 are large. There are nine entities affected by the control limit for one or more individual species. These entities are affected only in the sense that NMFS is showing how it will calculate excess shares across multiple permits. There are three or less affected entities by the aggregate species limit divestiture rules. When combined, there are nine unique entities affected by this rule—seven small and two large.

Recordkeeping and reporting requirements are being modified by this final rule. NMFS is amending the supporting statement for the Pacific Coast groundfish trawl rationalization program permit and license information collection Office of Management and Business (OMB) Paperwork Reduction Act (PRA) requirements (number 0648–0620) to reflect the abandonment protocols described in the preamble to this final rule. NMFS requests any comments on the PRA abandonment protocol, including whether those minor paperwork protocols described above would unnecessarily burden any QS owners.

There are no significant alternatives to the rule that accomplish the stated objectives of applicable statutes and that minimize any of the significant economic impact of the proposed rule on small entities. Inclusion of the abandonment process and the extension of divestiture and abandonment deadlines should aid small businesses in meeting the other divestiture requirements. There are no relevant Federal rules that may duplicate, overlap, or conflict with this action.

This final rule contains a collection-of-information requirement subject to the Paperwork Reduction Act (PRA) and which has been approved by OMB under control number 0648–0620.

Public reporting burden for QS permit owners who exceed the aggregate nonwhiting control limit and wish to abandon QS to NMFS is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding these burden estimates or any other aspect of this data collection, including suggestions for reducing the burden, to NMFS (see **ADDRESSES**) and by email to *OIRA_Submission@omb.eop.gov,* or fax to 202–395–7285.

Notwithstanding any other provision of the law, no person is required to respond to, and no person shall be subject to penalty for failure to comply with, a collection of information subject to the requirements of the PRA, unless that collection of information displays a currently valid OMB control number.

Pursuant to Executive Order 13175, this rule was developed after meaningful collaboration with tribal officials from the area covered by the Pacific Coast Groundfish FMP. Under the Magnuson-Stevens Act at 16 U.S.C. 1852(b)(5), one of the voting members of the Pacific Council must be a representative of an Indian tribe with federally recognized fishing rights from the area of the Council's jurisdiction. The regulations do not require the tribes to change from their current practices.

List of Subjects in 50 CFR Part 660

Fisheries, Fishing, and Indian fisheries.

Dated: November 3, 2015.

Samuel D. Rauch III,

Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.

For the reasons stated in the preamble, 50 CFR part 660 is amended as follows:

PART 660—FISHERIES OFF WEST COAST STATES

■ 1. The authority citation for part 660 continues to read as follows:

Authority: 16 U.S.C. 1801 *et seq.,* 16 U.S.C. 773 *et seq.,* and 16 U.S.C. 7001 *et seq.*

■ 2. In § 660.140, revise paragraph (d)(4)(v) to read as follows:

§ 660.140 Shorebased IFQ Program.

* * * * *

(d) * * *

(4) * * *

(v) *Divestiture.* Accumulation limits will be calculated by first calculating the aggregate non-whiting QS limit and then the individual species QS or IBQ control limits. For QS permit owners (including any person who has ownership interest in the owner named on the permit) that are found to exceed the accumulation limits during the initial issuance of QS permits, an adjustment period will be provided during which they will have to completely divest their QS or IBQ in excess of the accumulation limits. QS or IBQ will be issued for amounts in excess of accumulation limits only for owners of limited entry permits as of November 8, 2008, if such ownership has been registered with NMFS by November 30, 2008. The owner of any permit acquired after November 8, 2008, or if acquired earlier, not registered with NMFS by November 30, 2008, will only be eligible to receive an initial allocation for that permit of those QS or IBQ that are within the accumulation limits; any QS or IBQ in excess of the accumulation limits will be redistributed to the remainder of the initial recipients of QS or IBQ in proportion to each recipient's initial allocation of QS or IBQ for each species. Any person that qualifies for an initial allocation of QS or IBQ in excess of the accumulation limits will be allowed to receive that allocation, but must divest themselves of the QS (except for widow rockfish QS) or IBQ in excess of the accumulation limits by November 30, 2015, according to the procedure provided under paragraph (d)(4)(v)(A) of this section. If NMFS identifies that a QS permit owner exceeds the accumulation limits in 2016 or beyond, the QS permit owner must divest of the QS or IBQ in excess of the accumulation limits according to the procedure provided under paragraph (d)(4)(v)(B) of this section. Owners of QS or IBQ in excess of the control limits may receive and use the QP or IBQ pounds associated with that excess, up to the time their divestiture is completed.

(A) *Divestiture and redistribution process in 2015.* QS permit owners in excess of the control limit for aggregate nonwhiting QS holdings may abandon QS to NMFS by November 15, 2015 using the procedure provided under paragraph (d)(4)(v)(C) of this section. QS permit owners must divest themselves of any QS or IBQ in excess of the accumulation limits by November 30, 2015, except for widow rockfish QS, which cannot be transferred as described in paragraph (d)(3)(ii)(B)(*2*) of this section. After the November 30, 2015 divestiture deadline, NMFS will revoke all QS or IBQ held by a person (including any person who has ownership interest in the owner names on the permit) in excess of the accumulation limits following the procedures specified under paragraphs (d)(4)(v)(D) through (G) of this section. All abandoned or revoked shares will be redistributed to all other QS permit owners in proportion to their QS or IBQ holdings on or about January 1, 2016, based on current ownership records, except that no person will be allocated an amount of QS or IBQ that would put that person over an accumulation limit.

(B) *Divestiture and redistribution process in 2016 and beyond.* Any person owning or controlling QS or IBQ must comply with the accumulation limits, even if that control is not reflected in the ownership records available to NMFS as specified under paragraphs (d)(4)(i) and (iii) of this section. If NMFS identifies that a QS permit owner exceeds an accumulation limit in 2016 or beyond, NMFS will notify the QS permit owner that he or she has 90 days to divest of the excess QS or IBQ. In the case that a QS permit owner exceeds the control limit for aggregate nonwhiting QS holdings, the QS permit owner may abandon QS to NMFS within 60 days of the notification by NMFS, using the procedure provided under paragraph (d)(4)(v)(C) of this section. After the 90-day divestiture period, NMFS will revoke all QS or IBQ held by a person (including any person who has ownership interest in the owner names on the permit) in excess of the accumulation limits following the procedures specified under paragraphs (d)(4)(v)(D) through (G) of this section. All abandoned or revoked shares will be redistributed to all other QS permit owners in proportion to their QS or IBQ holdings on or about January 1 of the following calendar year, based on current ownership records, except that no person will be allocated an amount of QS or IBQ that would put that person over an accumulation limit.

(C) *Abandonment of QS.* QS permit owners that are over the control limit for aggregate nonwhiting QS holdings may voluntarily abandon QS if they notify NMFS in writing by the applicable deadline specified under paragraph (d)(4)(v)(A) or (B) of this section. The written abandonment request must include the following information: QS permit number, IFQ species, and the QS percentage to be abandoned. Either the QS permit owner or an authorized representative of the QS permit owner must sign the request. QS permit owners choosing to utilize the abandonment option will permanently relinquish to NMFS any right to the abandoned QS, and the QS will be redistributed as described under paragraph (d)(4)(v)(A) or (B) of this section. No compensation will be due for any abandoned shares.

(D) *Revocation.* NMFS will revoke QS from any QS permit owner who exceeds an accumulation limit after the divestiture deadline specified under paragraph (d)(4)(v)(A) or (B) of this section. NMFS will follow the revocation approach summarized in the following table and explained under paragraphs (d)(4)(v)(E) through (G) of this section:

If, after the divestiture deadline, a QS permit owner exceeds . . .	*Then . . .*
An individual species control limit (non-widow until reallocation is complete) in *one* QS permit.	NMFS will revoke excess QS at the species level.
An individual species control limit (non-widow until reallocation is complete) across *multiple* QS permits.	NMFS will revoke QS at the species level in proportion to the amount the QS percentage from each permit contributes to the total QS percentage owned.
The control limit for aggregate nonwhiting QS holdings	NMFS will revoke QS at the species level in proportion to the amount of the aggregate overage divided by the aggregate total owned. Until widow reallocation is complete, the proportion will be adjusted to hold widow QS at a constant level while bringing the aggregate percentage owned to 2.700%, using normal rounding rules.

(E) *Revocation of excess QS or IBQ from one QS permit.* In cases where a person has not divested to the control limits for individual species (non-widow until reallocation is complete) in one QS permit by the deadline specified under paragraph (d)(4)(v)(A) or (B) of this section, NMFS will revoke excess QS at the species level in order to get that person to the limits. NMFS will redistribute the revoked QS following the process specified in paragraph (d)(4)(v)(A) or (B) of this section. No compensation will be due for any revoked shares.

(F) *Revocation of excess QS or IBQ from multiple QS permits.* In cases where a person has not divested to the control limits for individual species (non-widow QS until reallocation is complete) across QS permits by the deadline specified under paragraph (d)(4)(v)(A) or (B) of this section, NMFS will revoke QS at the species level in proportion to the amount the QS percentage from each permit contributes to the total QS percentage owned. NMFS will redistribute the revoked QS following the process specified in paragraph (d)(4)(v)(A) or (B) of this section. No compensation will be due for any revoked shares.

(G) *Revocation of QS in excess of the control limit for aggregate nonwhiting QS holdings.* In cases where a QS permit owner has not divested to the control limit for aggregate nonwhiting QS holdings by the deadline specified under paragraph (d)(4)(v)(A) or (B) of this section, NMFS will revoke QS at the species level in proportion to the amount of the aggregate overage divided by the aggregate total owned. Until widow reallocation is complete and transfer of widow is allowed, widow will continue to be included in the aggregate calculation, but the proportion will be adjusted to hold widow QS at a constant level while bringing the aggregate percentage owned to 2.700%, using normal rounding rules. NMFS will redistribute the revoked QS following the process in paragraph (d)(4)(v)(A) or (B) of this section. No compensation will be due for any revoked shares.

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Proposed Rules

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CONSUMER PRODUCT SAFETY COMMISSION

16 CFR Parts 1112 and 1231

[Docket No. CPSC–2015–0031]

Safety Standard for High Chairs

AGENCY: Consumer Product Safety Commission.

ACTION: Notice of proposed rulemaking.

SUMMARY: The Danny Keysar Child Product Safety Notification Act, section 104(b) of the Consumer Product Safety Improvement Act of 2008 (''CPSIA''; Pub. L. 110–314, 122 Stat. 3016), requires the United States Consumer Product Safety Commission (''Commission'' or ''CPSC'') to promulgate consumer product safety standards for durable infant or toddler products. These standards must be substantially the same as applicable voluntary standards or more stringent than the voluntary standard if the Commission determines that more stringent requirements would further reduce the risk of injury associated with a product. In response to the direction under section 104(b) of the CPSIA, the Commission is proposing a safety standard for high chairs. The proposed rule would incorporate by reference ASTM F404–15, *Standard Consumer Safety Specification for High Chairs* (''ASTM F404–15'') into our new regulation and impose more stringent requirements for rearward stability and warnings on labels and in instructional literature. In addition, the Commission proposes to amend our regulations to include the newly proposed high chair standard in the list of notice of requirements (''NORs'') issued by the Commission.

DATES: Submit comments by January 25, 2016.

ADDRESSES: Comments related to the Paperwork Reduction Act aspects of the labeling and instructional literature requirements of the proposed mandatory standard for high chairs should be directed to the Office of Information and Regulatory Affairs, the Office of Management and Budget, Attn: CPSC Desk Officer, FAX: 202–395–6974, or emailed to *oira_submission@omb.eop.gov.*

Other comments, identified by Docket No. CPSC–2015–0031, may be submitted electronically or in writing:

Electronic Submissions: Submit electronic comments to the Federal eRulemaking Portal at: *http://www.regulations.gov.* Follow the instructions for submitting comments. The Commission does not accept comments submitted by electronic mail (email), except through *www.regulations.gov.* The Commission encourages you to submit electronic comments by using the Federal eRulemaking Portal, as described above.

Written Submissions: Submit written comments by mail/hand delivery/courier to: Office of the Secretary, Consumer Product Safety Commission, Room 820, 4330 East West Highway, Bethesda, MD 20814; telephone (301) 504–7923.

Instructions: All submissions received must include the agency name and docket number for this proposed rulemaking. All comments received may be posted without change, including any personal identifiers, contact information, or other personal information provided, to: *http://www.regulations.gov.* Do not submit confidential business information, trade secret information, or other sensitive or protected information that you do not want to be available to the public. If furnished at all, such information should be submitted by mail/hand delivery/courier.

Docket: For access to the docket to read background documents or comments received, go to: *http://www.regulations.gov,* and insert the docket number, CPSC–2015–0031, into the ''Search'' box, and follow the prompts.

FOR FURTHER INFORMATION CONTACT:
Stefanie C. Marques, Project Manager, Directorate for Health Sciences, U.S. Consumer Product Safety Commission, 5 Research Place, Rockville, MD 20850; telephone: 301–987–2581; email: *smarques@cpsc.gov.*

SUPPLEMENTARY INFORMATION:

I. Background and Statutory Authority

The CPSIA was enacted on August 14, 2008. Section 104(b) of the CPSIA, part of the Danny Keysar Child Product Safety Notification Act, requires the Commission to: (1) examine and assess the effectiveness of voluntary consumer product safety standards for durable infant or toddler products, in consultation with representatives of consumer groups, juvenile product manufacturers, and independent child product engineers and experts; and (2) promulgate consumer product safety standards for durable infant or toddler products. Any standard the Commission adopts under this directive must be substantially the same as the applicable voluntary standard or more stringent than the voluntary standard if the Commission determines that more stringent requirements would further reduce the risk of injury associated with the product.

The term ''durable infant or toddler product'' is defined in section 104(f)(1) of the CPSIA as ''a durable product intended for use, or that may be reasonably expected to be used, by children under the age of 5 years.'' Section 104(f)(2)(C) of the CPSIA specifically identifies high chairs as a durable infant or toddler product.

Pursuant to section 104(b)(1)(A) of the CPSIA, the Commission consulted with representatives of manufacturers, consumer groups, consultants, retailers, industry trade groups, and government agencies in reviewing and assessing the effectiveness of the existing voluntary standard for high chairs, ASTM F404–15, largely through ASTM International's (''ASTM''; formerly the American Society for Testing and Materials) standard-development process. The standard the Commission is proposing in this notice of proposed rulemaking (''NPR'') is based on ASTM F404–15 with more stringent requirements for rearward stability and warnings in labels and instructional literature.

The testing and certification requirements of section 14(a) of the Consumer Product Safety Act (''CPSA''; 15 U.S.C. 2051–2089) apply to the standards promulgated under section 104 of the CPSIA. Section 14(a)(3) of the CPSA requires the Commission to publish an NOR for the accreditation of third party conformity assessment bodies (*i.e.,* test laboratories) to assess whether a children's product conforms to applicable children's product safety rules. If adopted, the proposed rule for high chairs would be a children's product safety rule that requires the issuance of an NOR. For this reason, this NPR also proposes to amend 16 CFR part 1112 to include proposed 16 CFR part 1231, the section in which the high chair standard would be codified.

II. The Product

A. Definition

ASTM F404–15 defines a ''high chair'' as ''a free standing chair for a child up to 3 years of age which has a seating surface more than 15 in. above the floor and elevates the child normally for the purposes of feeding or eating.'' The ASTM standard further specifies that a high chair may be sold with or without a tray, have adjustable heights, and recline for infants.

There are various designs and construction materials for high chairs. Typical high chairs consist of a plastic, wood, or metal frame, often with a padded fabric seat. Some models fold for storage and transport or convert for continued use as a child grows. Some high chairs include a removable snack tray or mounted toy accessories and some have no trays. High chairs may have a passive crotch restraint (*i.e.,* two separate bounded openings for the occupant's legs), a rigid front torso support, a three-point restraint system, or a five-point restraint system with shoulder harnesses. High chair designs include restaurant-style chairs, four-legged A-frame styles, single-leg pedestals, and Z-frame styles. Restaurant-style high chairs are discussed further in section VII. of this preamble.

B. Market Description

In 2013, the CPSC conducted a Durable Nursery Product Exposure Survey (''DNPES'') of U.S. households with children under the age of 6. Data from DNPES indicate that there are approximately 9.74 million high chairs in U.S. households with children under the age of 6 and about 7.14 million high chairs actually in use in those households. High chairs range in price from $35 to $650.

Staff identified 62 firms supplying high chairs to the U.S. market. Fifty-one of these are domestic, including 27 manufacturers, 19 importers, and five wholesalers. The remaining 11 firms are foreign, including nine manufacturers, one importer, and one retailer. Of these 62 firms, 48 market their high chairs to consumers. The remaining 14 firms market their high chairs for use in commercial settings, primarily in restaurants, but these products generally also are available to consumers.

III. Incident Data

The Commission receives data regarding product-related injuries from several sources. One such source is the National Electronic Injury Surveillance System (''NEISS''), from which CPSC can estimate the number of injuries associated with specific consumer products that are treated in U.S. hospital emergency departments (''EDs'') nationwide, based on a probability sample. Other sources include reports from consumers and others through the Consumer Product Safety Risk Management System (which also includes some NEISS data) and reports from retailers and manufacturers through CPSC's Retailer Reporting System (collectively referred to as Consumer Product Safety Risk Management System data (''CPSRMS'')).

Through CPSRMS sources, the Commission has received 1,296 reports of incidents related to high chairs that occurred between January 1, 2011 and December 31, 2014. Because several of these reports include more than one incident or issue, the total number of incidents is 1,308. These reports include one fatality and 138 injuries; for the remaining incidents, no injury occurred, or no injury was reported. Table 1 provides the number of incidents, injuries, and fatalities by year for 2011 to 2014.

TABLE 1—CPSRMS INCIDENT REPORTS INVOLVING HIGH CHAIRS BETWEEN JANUARY 1, 2011 AND DECEMBER 31, 2014

Incident year	Total	Injuries	Fatalities
2011	276	44	0
2012*	360	51	0
2013*	491	28	0
2014*	169	15	1
Total	1,296	138	1

Source: CPSC's Consumer Product Safety Risk Management System
* data collection is ongoing

Of the 1,296 reports CPSC received from CPSRMS sources, 923 provided the age of the child involved. For incidents in which age was reported, the majority involved children between 7 and 18 months old.

EDs participating in NEISS reported 1,078 injuries and no deaths related to high chairs between January 1, 2011 and December 31, 2014. Extrapolating from this probability sample, there were approximately 31,300 injuries and no fatalities related to high chairs treated in EDs between January 1, 2011 and December 31, 2014. Approximately 75 percent of injuries reported through NEISS involved children between 7 and 23 months old.

A. Fatalities

The Commission received a report in 2014 of one fatality associated with a high chair. Apart from indicating that the high chair involved had broken, the report provided little information about the decedent or the circumstances of the incident. The Commission has been unable to obtain additional information regarding this incident.

B. Nonfatal Injuries

Of the 138 CPSRMS injuries related to high chairs that occurred between 2011 and 2014, three resulted in moderate injuries treated in EDs. These injuries included a puncture wound to the forehead, a broken collarbone, and a lacerated finger. There were no severe injuries, and the remaining injuries primarily resulted in contusions, abrasions, and lacerations. Many of the incident descriptions in the remaining 1,157 reports that did not state that an injury had occurred, nevertheless, indicated the potential for injury.

For injuries reported through NEISS, 94 percent were treated and released. The most commonly injured body parts were the head (65 percent) and face (17 percent). The most common types of injuries were injuries to internal organs (48 percent), contusions and abrasions (22 percent), and lacerations (11 percent). In 1,540 of the estimated 31,300 injuries treated in U.S. EDs, severe head injuries, such as fractured skulls and concussions, occurred.

C. Hazard Pattern Identification

CPSC staff reviewed NEISS and CPSRMS data to identify hazard patterns associated with high chairs. Because CPSRMS data sources generally provide greater detail about incidents, staff was able to identify more distinct hazard patterns using this data than NEISS data. CPSC staff identified several hazard patterns associated with high chairs in reviewing the 1,308 CPSRMS incidents. Approximately 96 percent of the 1,308 incidents involved issues with specific components of the high chair, including the frame, seat, restraint system, armrest, tray, toy accessories, wheels, footrest, and other features. Approximately 4 percent involved general problems with the high chair, including the design and stability, and less than 1 percent fell into other categories, including consumer observations and incidents in which reports provided insufficient information to identify a hazard pattern (*i.e.,* undetermined). Staff was unable to identify the hazard pattern for the one fatality because there was insufficient information in the report. Table 2 provides the frequency of each hazard pattern and category.

TABLE 2—HAZARD PATTERNS FOR CPSRMS INCIDENTS INVOLVING HIGH CHAIRS BETWEEN JANUARY 1, 2011 AND DECEMBER 31, 2014

Hazard pattern	Total incidents	Injuries	Fatalities
Frame	650	20	0
Seat	205	41	0
Restraint System	139	12	0
Armrest	81	2	0
Tray	75	33	0
Toy Accessories	70	1	0
Wheels	21	1	0
Footrest	14	0	0
Miscellaneous Issues	8	1	0
Design	22	13	0
Stability	16	12	0
Consumer Observations	3	0	0
Undetermined	4	2	1
Total	1,308	138	1

Issues with frames account for the greatest number of incidents. Examples of these incidents include broken frames, legs, seat supports, and loose screws. Issues with seats are associated with the greatest number of injuries. Examples of these incidents include torn, cracked, or peeling seat pads and seat-reclining issues. Examples of restraint system incidents include broken buckles and prongs, jamming, easy release, torn or fraying straps, pinching, and ineffective restraints. Examples of issues with armrests include cracking or breaking. Examples of tray incidents include trays failing to lock or remain locked, trays releasing too easily, difficulty releasing trays, and pinching. Examples of toy accessory incidents include cracked or broken toy accessories. Examples of incidents involving wheels include broken or loose wheels or wheels not locking. Examples of footrest incidents include cracked or broken footrests. Examples of other miscellaneous issues include unclear assembly instructions, excessive lead content in paint, finish coming off, poor construction quality, and loose hardware.

General issues with the design and stability of high chairs also contributed to incidents and injuries. Examples of incidents related to design issues include children's limbs, fingers, and toes becoming entrapped in spaces or openings. In two separate incidents, children were entrapped by the neck in the seatback opening and leg opening of high chairs. Examples of incidents involving stability issues include a high chair actually or nearly tipping over.

CPSC identified two additional categories that do not represent particular hazard patterns. First, several incident reports included consumer observations that did not indicate an incident with a high chair had occurred. Examples of these include perceived safety hazards and unauthorized sales of recalled high chairs. Second, several reports, including a fatality report, provided insufficient information for CPSC to determine the circumstances or cause of the incident.

One issue that relates to several of these hazard patterns is prevalent in both NEISS and CPSRMS incidents—namely, falls from high chairs. Many of the incidents reported through NEISS and CPSRMS sources involved children falling from high chairs. Within NEISS data, 78 percent of incidents involved falls but did not specify the cause, and an additional 18 percent involved mainly falls that occurred when a component of a high chair failed, a high chair tipped over, or a child climbed in or out of a high chair. Many of the CPSRMS incidents also involved falls from a high chair. Fall incidents are particularly evident in the stability, restraint system, tray, and frame hazard patterns. Falls often occurred when these features fail or the restraint system is not used properly. Fall incidents have the potential to result in serious injuries, including severe head injuries, which can cause brain damage and impact a child's development and cognitive skills. Of the 1,308 CPSRMS incidents, 79 fall incidents showed the potential for serious injuries, and in many of these incidents, the child sustained a head injury. Of the 31,300 estimated NEISS incidents, 1,540 resulted in severe head injuries.

D. Product Recalls

Since January 1, 2010, there have been 10 recalls of high chairs involving eight firms. The recalled high chairs were responsible for a total of 72 injuries, including 44 injuries involving bumps and bruises, 11 lacerations requiring medical closure (stitches, tape, or glue), one scratched cornea, and one hairline fracture to the arm. These injuries were primarily due to falls from the high chair.

IV. International Standards for High Chairs

CPSC is aware of four international standards that apply to high chairs:

- ASTM F404–15;
- EN 14988: 2006, *Children's High Chairs—Safety Requirements and Test Methods* (''European standard'');
- AS 4684–2009, *High Chairs—Safety Requirements* (''Australian standard''); and
- ISO 9221: 1992, *Furniture—Children's High Chairs* (''ISO standard'').

CPSC staff reviewed the provisions in these four standards and believes that ASTM F404–15 best addresses the hazard patterns indicated in the incident data CPSC has received. In most areas, ASTM F404–15 includes more stringent requirements than the other three international standards. For example, to test forward stability, the European standard requires testing with an 11-pound load and 5.6 foot-pound force, while ASTM F404–15 requires testing with a 40-pound load and 14 foot-pound force, making it the more stringent standard.

In reviewing the provisions in which one of the other international standards includes more stringent requirements than ASTM F404–15, CPSC found that incident data do not indicate that the more stringent standard is necessary to reduce the risk of injury, and the requirements in ASTM F404–15 are sufficient. For example, the European standard has height requirements for the sides of high chairs, while ASTM F404–15 does not. However, incident data do not indicate that side height is a factor in fall hazard patterns. Similarly, the Australian standard requires castors or gliders to be in specific configurations, and the ISO standard only allows castors for convertible high chairs, while ASTM F404–15 has no requirements for castors. However, incident data do not indicate that castors are a common cause of injury.

Based on these comparisons, CPSC believes that ASTM F404–15 is, in general, a more stringent standard than the other three international standards and is better tailored to address the hazard patterns shown in the incident data.

V. ASTM F404–15

A. History of ASTM F404–15

ASTM first approved and published a standard for high chairs in 1975, as ASTM F404–75, *Standard Consumer Safety Specification for High Chairs.* ASTM has revised the voluntary standard many times since then, adding and modifying requirements. Some of the more substantial additions over the past 5 years include requirements for tray-release mechanisms, visibility and permanency of labels, restraint system installation, and restraint anchor integrity. ASTM approved the current version, ASTM F404–15, on May 15, 2015.

B. Description of ASTM F404–15

CPSC staff, together with stakeholders on the ASTM subcommittee task group for high chairs, developed modified and new requirements for ASTM F404–15 to address the hazards associated with high chairs. ASTM F404–15 includes the following key provisions: scope, terminology, calibration and standardization, general requirements, performance requirements, test methods, labeling and warnings, and instructional literature. The following provides an overview of these provisions; to view the complete standard, see the instructions in section X. of this preamble.

1. Scope

This section states the scope and intent of the standard.

2. Terminology

This section provides definitions of terms specific to the standard.

3. Calibration and Standardization

This section provides general instructions for conducting tests.

4. General Requirements

This section includes general requirements regarding various issues, such as components of a high chair, conversion kits, accessories, threaded fasteners, sharp edges and points, small parts, wood parts, latching or locking mechanisms, labels, openings, toy components, and lead in paint.

5. Performance Requirements and Test Methods

These sections contain performance requirements and associated test methods for high chairs. The following summarizes key requirements in these sections.

a. Protective Components: These requirements provide for testing protective components such as caps and plugs.

b. Tray or Front Torso Support—Drop Test: Each removable tray and front torso support must be dropped from a specified height in multiple orientations. The purpose of this requirement is to test whether high chair components continue to function or exhibit mechanical hazards (*e.g.,* sharp edges) after the drop test.

c. Tray or Front Torso Support—Pull Tests: The tray or front torso support must be pulled multiple times from multiple sides and directions with a specified force. The purpose of this requirement is to test whether frontal support can withstand kicking or pulling.

d. Static Load: A high chair must support specified weights on the seat, tray, step, and footrest. The purpose of this requirement is to test whether the high chair seat and step can support more than the weight of a child and whether the tray can withstand overloading.

e. Stability: A high chair must not tip over when pulled forward, backward, or sideways by a specified force. The purpose of this requirement is to test the high chair's resistance to falling over if an occupant leans forward, pushes off a nearby surface, or the high chair is otherwise pushed.

f. Exposed Coil Springs: Any exposed coil springs that reach a specified distance from each other during static load testing must be designed to prevent pinching or entrapment.

g. Scissoring, Shearing, and Pinching: Each accessible point at which components move (*e.g.,* fastening points, pivots) must admit a probe with a specified diameter. The purpose of this requirement is to prevent scissoring, shearing, and pinching of an occupant.

h. Restraint System: The standard requires an active restraint system, such as a belt, to secure a child in the high chair. The restraint system must include waist and crotch restraints. In addition, the restraints must withstand upward and downward force tests as well as testing to pull on restraint system attachments. The purpose of these requirements is to ensure that the restraint system and its closing means remain anchored and functional under various forces.

i. Completely-Bounded Openings: This section requires high chairs with completely-bounded openings in front of the occupant to have a passive crotch restraint with specified maximum sizes for gaps and openings. The crotch restraint must be installed or tethered in place to prevent consumers from mis-installing or not installing it and tethers must withstand specified forces. The purpose of these provisions is to reduce the likelihood of injury or death from an occupant sliding through and being entrapped in an opening.

j. Structural Integrity: A high chair must withstand dynamic cycle testing, involving repeated drops of a weight on the seat, without any structural components breaking or the seat height or angle changing beyond a set limit. The purpose of this requirement is to test whether the high chair can withstand the dynamic loads to which it will be subjected.

k. Tray Latch Release Mechanisms: The standard includes requirements for tray latches to prevent unintentional or accidental release. These requirements include specific types and placements for latch release mechanisms and testing to ensure they can withstand a specified force. The purpose of these requirements is to address incidents in which occupants fell from high chairs that had passive restraints integrated into the tray.

l. Side Containment: Any completely-bounded openings on the sides of the seat must meet specified maximum dimensions for gaps and openings. The purpose of this requirement is to reduce the likelihood of injury or death from an occupant sliding through and being entrapped in an opening.

m. Protrusions: Projections must meet certain dimensional requirements if they are located on the outside of high chair legs at a height a toddler is susceptible to falling into. The purpose of this requirement is to address the incidents in which children outside of high chairs sustained injuries from falling into tray storage hooks or other protrusions.

n. Locking Mechanisms: Locking mechanisms must be able to withstand a specified force.

o. Permanency of Labels and Warnings: This section specifies testing and criteria for determining the permanency of labels.

6. Labeling and Warnings

This section contains various requirements related to warnings and labels, including content, format, and prominence requirements.

7. Instructional Literature

This section requires that instructions be provided with high chairs and be easy to read and understand. The instructions must comply with content, format, and prominence requirements.

VI. Assessment of ASTM F404–15

CPSC considered the fatalities, injuries, and non-injury incidents associated with high chairs that occurred between January 1, 2011 and December 31, 2014, and staff evaluated ASTM F404–15 to determine whether the voluntary standard addresses these hazards or whether more stringent standards would reduce the risk of injury associated with high chairs. CPSC believes that ASTM F404–15 effectively addresses the hazards indicated in the incident data, with the exception of two areas. CPSC believes that more stringent requirements than those in ASTM F404–15 would further reduce the risk of injury associated with high chairs regarding rearward stability and warnings on labels and in instructional literature. Consequently, CPSC proposes additional requirements for those areas.

This section provides CPSC's assessments of how ASTM F404–15 addresses the hazard patterns in the incident data. In its analysis, CPSC identified broad categories into which the incidents fall. One category is components of high chairs, including issues with frames, seats, restraint systems, armrests, trays, toy accessories, wheels, footrests, and miscellaneous issues. Another category is general problems with high chairs, including design and stability issues. And the final category includes incidents that did not clearly fall within any of the above groupings—these are listed below as consumer observations and undetermined. This section discusses each of these hazard patterns, in descending order of frequency of incidents within each of the three categories (see Table 2, above). Section VIII. discusses the additional requirements that CPSC proposes for rearward stability and warnings.

A. Frame

There were 650 CPSRMS incidents involving the frame of a high chair, resulting in a total of 20 injuries. Common incidents included cracked frames or height adjustors, loose screws, and buckling legs. More than 80 percent of frame-related incidents involved cracked components on two similar high chair models from one manufacturer and resulted in only a few minor injuries.

ASTM F404–15 contains two separate requirements intended to provide structural integrity to high chair frames—a static load test and a drop test. Several general requirements also address the hazards associated with frame failures, such as the requirements regarding the use of certain screws for key structural elements to provide for proper installation and durability over time. Since frame-related incidents are not an industry-wide problem, CPSC believes that the ASTM F404–15 requirements for structural integrity, load tests, and fasteners effectively address the safety hazards related to high chair frames.

B. Seat

There were a total of 205 incidents involving the seat of a high chair, resulting in 41 injuries. Seat-related issues include cracked or peeling seat pads, broken seat reclining hardware, seat backs detaching, and loose screws. Nearly 60 percent of seat issues involved a single manufacturer's seat pads cracking or peeling after multiple washings. Eighty-three percent of seat-related injuries involved cracked or peeling seat pads scratching occupants' legs.

ASTM F404–15 contains two requirements that address the integrity of structural components of a high chair, including the seat. These are the static load test and drop test. General requirements, such as those regarding sharp points and small parts, also address the risk of laceration or choking on pieces that detach from the seat. CPSC believes that ASTM F404–15 effectively addresses the hazards associated with high chair seats.

C. Restraint System

There were 139 incidents involving the restraint system of a high chair, resulting in 12 injuries. These issues generally fall into two categories—restraint systems that failed and unused restraint systems.

Within the first category, incidents included buckles breaking or separating from straps, straps tearing or pulling out of anchor points, and other issues. To address these issues, ASTM F404–15 requires all high chairs to be shipped with two types of restraint systems—a pre-attached ''active'' crotch and waist belt restraint system and a ''passive'' crotch restraint—that have undergone testing to ensure they work as intended. ASTM F404–15 also requires the restraint anchors to withstand a pull test. CPSC believes that ASTM F404–15 effectively addresses the hazard pattern associated with restraint system failures.

As for the second category, unused restraint systems, CPSC believes that a more stringent standard for labels and instructional literature than ASTM F404–15 would further reduce the risk of injuries associated with this issue. CPSRMS and NEISS data indicate that, in many incidents, caregivers did not use the restraint system. CPSC believes more effective warnings would increase consumer use of restraint systems and reduce these incidents.

CPSC's review of CPSRMS data revealed that of the 1,308 incidents involving high chairs, there were numerous cases in which the caregiver did not use the high chair restraints, resulting in the child falling or nearly falling from the high chair. Although many incident reports have limited detail, CPSC noted that several incidents involved a child falling from a high chair when the tray disengaged, suggesting the tray was used as the sole restraint. Several reports also indicated that a caregiver's attention was elsewhere when the incident occurred. And several other reports suggested that the restraint system was ineffective at restraining the child or was used improperly.

CPSC's review of NEISS data revealed a similar pattern. The vast majority of NEISS incidents involved falls, which suggests that restraints were unused or ineffective. Although NEISS data provide limited details, many reports state that the child was not restrained or that the restraint had just been removed when the incident occurred. In some cases, the incident happened when a caregiver turned away from the child, and some reports stated the child was strapped in before the fall, suggesting the restraint fit poorly or was not adjusted properly.

CPSC believes that the requirements in ASTM F404–15 do not adequately address the risk of injury associated with unused or improperly used restraint systems. ASTM F404–15 includes three types of requirements relevant to this hazard. First, the standard requires the passive crotch restraint to arrive attached or tethered to its manufacturer's recommended use position to reduce the chances that the restraint is not installed before use. Second, section 8 of ASTM F404–15 requires warnings about the risk of serious injury or death from falling or sliding out of a high chair, instructions to use the restraint system, and a warning never to leave a child unattended. Some of these warnings must be visible to a person standing near the high chair at any one position when a child is in the high chair, but not necessarily visible from all positions. Other warnings must be visible to a caregiver while placing a child in the high chair, but not necessarily visible when the child is in the high chair. Third, section 9 of ASTM F404–15 specifies that instructional literature provided with a high chair must include the same warning statements that are on the high chair; state that only children capable of sitting upright unassisted should use a high chair; advise consumers to use the restraint system; and inform consumers that the tray is not a restraint system.

CPSC believes that more stringent content, form, and placement requirements for warnings than ASTM F404–15's would further reduce the risk of injury associated with unused restraint systems. Section VIII. discusses CPSC's proposed labeling and instructional literature requirements in greater detail.

D. Armrest

Eighty-one high chair incidents involved armrests and resulted in two injuries. Many of the reports indicate armrests broke as users removed the tray. All but one of the armrest incidents involved a single high chair model.

ASTM F404–15 includes several performance tests that address this hazard. For example, the static load and pull tests for trays also evaluate the durability of armrests because trays are typically attached to armrests. CPSC believes that ASTM F404–15 effectively addresses the armrest hazard pattern. The incident reports indicate this is not an industry-wide problem; there were only a small number of minor injuries associated with armrests, and ASTM F404–15 includes tests for armrest durability.

E. Tray

A total of 75 high chair incidents involved trays and resulted in 33 injuries. Common tray incidents included pinching, and in addition, falls that occurred when trays unexpectedly detached or released too easily.

ASTM F404–15 contains several performance requirements that address tray incidents, including pull tests, a static load test, and specific tray-latching requirements. Provisions on tray latch accessibility and latch actuation that ASTM adopted in 2007 and 2010 have been effective at reducing tray-related incidents, as data show a decline in incidents for models manufactured after those revisions. General requirements, such as those for sharp edges and scissoring, shearing, and pinching, also address these hazards. CPSC believes that ASTM F404–15 effectively addresses the tray hazard pattern.

F. Toy Accessories

Toy accessories were involved in 70 high chair incidents, resulting in one injury. These reports indicate toy accessories cracked or broke.

ASTM F404–15 includes requirements for toy accessory durability, requiring manufacturers to attach toy accessories to the high chair for testing, including tray drop testing and load cycle testing. CPSC believes ASTM F404–15 effectively addresses the toy accessory hazard pattern. CPSC expects the toy durability requirements in ASTM F404–15, as well as the general requirement in ASTM F404–15 calling for compliance with ASTM's toy standard, ASTM F963, *Standard Consumer Safety Specification for Toy Safety,* to reduce hazards related to cracked or broken toy accessories.

G. Wheels

Wheels were involved in 21 high chair incidents, resulting in one injury. Common incidents involved wheels becoming loose, breaking, or not locking. All but two of these incident reports cited cracked or broken components of high chairs from one manufacturer and almost all of these were the same model. In the single incident that resulted in an injury, the wheel was only a minor contributing factor.

ASTM F404–15 evaluates wheel durability through a static load test and drop test. CPSC believes that ASTM F404–15 effectively addresses this hazard pattern, as wheel issues do not appear to be an industry-wide hazard pattern, do not contribute to a substantial number of injuries, and ASTM F404–15 contains provisions that evaluate wheel integrity.

H. Footrests

Fourteen high chair incidents involved footrests and resulted in no injuries. All of the incident reports cited footrests cracking on a single high chair model.

ASTM F404–15 includes a static load test to evaluate the durability of footrests. CPSC believes that ASTM F404–15 effectively addresses this hazard pattern, as this is not an industry-wide issue, and ASTM F404–15 includes requirements for footrest durability.

I. Miscellaneous Issues

High chair incident reports included various additional issues, such as paint with excessive lead content, cracked wood finish, loose screws, and assembly problems. Eight high chair incident reports cited these miscellaneous issues and resulted in one injury.

ASTM F404–15 contains several requirements that address these various issues, such as issues with screws on consumer-assembled structural components, sharp edges, small parts, exposed wood, and compliance with 16 CFR part 1303 (banning lead-containing paint). ASTM F404–15 also includes requirements for instructional literature, intended to provide clear assembly instructions. CPSC believes that ASTM F404–15 effectively addresses these issues.

J. Design

Design issues were involved in 22 high chair incidents, resulting in 13 injuries. Incident reports relating to the design of a high chair primarily cited designs that create entrapment hazards. These hazards commonly resulted in children's arms being entrapped between the back of a high chair and the tray or children's legs catching in the gap between the bottom of the tray and the top of the passive crotch restraint. In the most severe cases, children slid into leg hole openings under the tray and hung by their necks.

To address these ''submarining'' cases, ASTM F404–15 contains several performance tests that specifically address openings, including a probe test for gaps and completely-bounded openings in front of occupants, around the passive crotch restraint, and between horizontal portions and the tray. The standard also includes a test for leg openings and openings around the sides of the high chair seat to ensure that occupants cannot slide through and become entrapped. ASTM F404–15 requires manufacturers to attach passive crotch restraints to the high chair to increase the likelihood that consumers will use restraints and reduce submarining incidents. ASTM F404–15's requirements on openings and scissoring, shearing, and pinching address less serious entrapment hazards. CPSC believes that ASTM F404–15 effectively addresses the design hazard pattern.

K. Stability

Stability issues played a role in 16 high chair incidents, resulting in 12 injuries. This hazard pattern includes forward tip-overs, side tip-overs, and rearward tip-overs. Tip-overs generally occur when a child leans out of the high chair or pushes off a nearby surface. In NEISS reports that included enough detail to identify the cause of the incident, the vast majority of the incidents were falls resulting from tip-overs, mostly rearward tip-overs. CPSRMS data also included reports of many injuries resulting from high chairs tipping over, also frequently rearward tip-overs.

ASTM F404–15 requires forward, sideways, and rearward tip-over testing. The standard also contains a stability requirement to simulate the load applied by a child climbing into the chair. CPSC believes that ASTM F404–15 effectively addresses forward and sideways tip-overs. However, based on the frequency of rearward tip-over incidents, CPSC believes that ASTM F404–15 does not adequately address rearward tip-over hazards and a more stringent standard is necessary. Section VIII. discusses CPSC's proposed rearward stability standard.

L. Consumer Observations

Three incident reports involved consumers' perceived safety hazards or complaints about high chairs, but none of the incidents resulted in injuries. These reports did not provide enough information for CPSC to assess the adequacy of ASTM F404–15 regarding the reported concerns.

M. Undetermined

Four high chair incident reports did not provide sufficient information for CPSC to determine how the incidents, including the one reported death and two injuries, occurred. The lack of information available in these incident reports made it impossible for CPSC to assess the effectiveness of ASTM F404–15 in addressing these issues.

VII. Restaurant-Style High Chairs

ASTM F404–15 applies to high chairs without distinguishing where consumers use them. However, many high chairs are designed to be used in commercial settings, primarily restaurants (''restaurant-style high chairs''). These high chairs generally include features that are particularly useful in commercial or restaurant settings and may not present the same hazards as high chairs used in the home. Based on CPSC's review of incident data and the potential economic impact of the requirements proposed in this NPR, it is possible that, due to the unique environmental factors in restaurant settings, high chairs used in these settings may present lesser hazards and warrant fewer requirements to reduce the risk of injury associated with high chairs. The following describes the factors that weigh in favor of and against distinguishing restaurant-style high chairs from other high chairs and possible options for distinguishing them.

Of the 1,296 CPSRMS incident reports, three explicitly state that the incidents occurred in restaurants while consumers used the establishments' high chairs. Restaurant-style high chairs have several distinct features. This style of chair is generally constructed from robust materials, such as wood or plastic and do not have trays. Therefore, restaurant-style high chairs can be pulled up to a table. In addition, restaurant-style high chairs are designed to be compact and stackable for easy storage and have little space available for labels. Restaurant-style high chairs are also generally designed to be lower to the ground and narrower than high chairs intended for home use. Additionally, restaurant-style high chairs are designed not only to accommodate a wide range of ages, from infants to toddlers, but also accommodate bulky outerwear and shoes. These design attributes are desirable in a restaurant setting to adapt to the environment and be versatile and compact. However, these features also make it difficult for these high chairs to comply with the requirements in ASTM F404–15 and the additional requirements proposed in this NPR.

There are several requirements that restaurant-style high chairs frequently do not follow. Contrary to ASTM F404–15, wedge blocks can generally pass through the leg openings of restaurant-style high chairs. The large side and back openings also do not meet ASTM F404–15. The belt used as a passive restraint often fits loosely over the top rail of the high chair and does not meet the passive restraint requirements of ASTM F404–15. The lower and narrower stance of these high chairs also may impact the chairs' compliance with the stability requirements in ASTM F404–15. Moreover, there is little space on these high chairs to accommodate the label requirements in ASTM F404–15 or the additional requirements CPSC proposes.

There are several reasons it may be appropriate to apply different requirements to restaurant-style high chairs. First, the environment in which restaurant-style high chairs are used may not present the same hazards that are common in the home. In a restaurant environment, caregivers sit next to the child seated in the high chair, are unlikely to leave a child unattended in the high chair, and are not distracted by the tasks that may divert the caregiver's attention in a home environment. For these reasons, a caregiver would likely be able to prevent an incident from occurring, or correct any issue quickly, before serious injury or death could occur. None of the three incidents involving restaurant-style high chairs reported to CPSC involved children who were unattended and entrapped in the openings of the high chair. Because caregivers are likely to be nearby and attentive, it is likely to be less necessary for warnings regarding attending the child to be visible when the child is in the high chair. Second, modifying restaurant-style high chairs to comply with ASTM F404–15 would likely reduce their utility because these high chairs would no longer accommodate larger children or bulky clothes, and would be less compact and not stackable. Finally, given the possible lesser safety issues, the proposed requirements in this NPR impose proportionately high costs on restaurant-style high chair suppliers because these products require more changes to come into compliance.

There are also several reasons to apply the same requirements to restaurant-style high chairs and other high chairs. First, restaurant-style high chairs are readily available to consumers and are also used in homes. Two of the firms that market their products to consumers produce high chairs identical to the wooden high chairs used in restaurants. This negates the environmental factors that support distinguishing high chairs used in restaurants. Second, there is minimal incident data to indicate whether high chairs actually pose lesser safety risks in restaurant settings. It is also possible that, although caregivers in restaurants are near the child, caregivers may be less likely to attend to the child or use the restraint system because caregivers assume they are near enough to the child to prevent an incident. As the incident data indicate, this may not be correct, as incidents can happen quickly. Finally, because high chairs are readily available to consumers, it may be difficult, practically, to apply different requirements to these high chairs.

Some options for treating restaurant style-high chairs differently than other high chairs include excluding restaurant-style high chairs from the proposed standard or modifying individual requirements, such as label placement and bounded-openings, to reflect the features and lesser safety issues associated with restaurant-style high chairs.

CPSC requests comments on the following factors: whether it is appropriate to distinguish these high chairs, which requirements should differ, and how CPSC could apply those distinctions.

VIII. Description of Proposed Changes to ASTM Standard

The proposed rule would create part 1231, titled, *Safety Standard for High Chairs.* As explained above, the Commission believes that ASTM F404–15 effectively addresses the safety hazards associated with high chairs, with the exception of rearward stability and warnings in labels and instructional literature. For this reason, the Commission proposes to incorporate by reference ASTM F404–15, with modified requirements for rearward stability and warnings. This section discusses the proposed changes to ASTM F404–15.

A. Rearward Stability

Based on the incident data discussed above, CPSC believes that a more stringent standard than ASTM F404–15 for rearward stability would further reduce the risk of injury. CPSC staff has tested the high chair models involved in incidents and found that the tested models passed the requirements of ASTM F404–15. To develop a performance test to measure and improve the rearward stability of high chairs, CPSC worked with an ASTM task group to develop an alternative rearward stability test, based on CPSC staff's and manufacturers' testing. Although this test is not included in ASTM F404–15, ASTM may adopt the test in future revisions. CPSC proposes to adopt this test, in lieu of the rearward stability test in ASTM F404–15.

The proposed standard is based on a rearward stability index (''SI'') rating that evaluates the factors that contribute to rearward tip-overs and sets a minimum SI score for high chairs. The task group developed the SI based on a review of various stability requirements, the incident data, and testing numerous high chair models, including those involved in rearward tip-over incidents and those not reported to be involved in such incidents. The SI measures the elements associated with high chair occupants pushing back from a surface. The SI rates high chairs based on two characteristics associated with rearward tip-overs—the force (''F'') required to tip the chair over in the rearward direction and the distance (''D'') that a reference point on the seat travels as the chair tilts from the manufacturer's recommended use position to the point of instability just before tipping over. A chair design will score well if it requires a large push-off force and/or a long distance to reach its tipping point. CPSC's and manufacturers' tests determined that the tip force is a more critical factor in identifying unstable chairs. As such, the SI weights F twice as heavily as D: $SI = 2F + D$.

The test method CPSC developed through this testing and proposes in this NPR includes the following elements:

- Attach a force gauge to the center line of the back of the seat, 7.25″ above the seating surface and preload it with 3 pounds of force (to eliminate any slack in fabric or loose seats);
- Establish an initial reference point along the plane of the force gauge;
- Gradually apply a rearward, horizontal force until the point at which the chair becomes unstable and begins to tip over backward;
- Record the maximum force applied during the tip test, along with the total distance the reference point moved from its predetermined position; and
- Calculate the SI by multiplying the force by a factor of two and adding the distance. Based on the product testing conducted, CPSC proposes requiring high chairs to have an SI of 50 or more.

CPSC also proposes to include requirements for the test surface and positioning of the high chair for rearward stability testing. These requirements are based on CPSC staff's testing initiative and aim to reduce variation in test results. First, CPSC proposes to require the high chair seat back, tray, seat, and wheels to be in specific positions for rearward stability testing. This will decrease variability in test methods and results, and based on testing, CPSC believes that these positions are the most effective for assessing high chair stability.

Second, CPSC proposes to require a specific test surface, including 60-grit sandpaper to prevent sliding and maximum parameters for the stop block placed behind a high chair with wheels to instigate tipping. Without these requirements, test results vary because test surfaces differ and the height of a stop block affects the amount of force necessary to tip over a high chair.

The proposed rearward stability requirement and test procedure are effective at identifying high chairs that have been involved in rearward tip-over incidents. As such, CPSC believes this more stringent standard would further reduce the risk of injury associated with rearward high chair tip-overs, and proposes requiring this modification to ASTM F404–15.

B. Warnings in Labels

Based on incident data discussed above and research on effective warnings, CPSC believes that the on-product warning requirements in ASTM F404–15 do not adequately address the safety risks associated with high chairs; therefore, CPSC proposes more stringent requirements that would further reduce the risk of injury associated with falls from high chairs. Specifically, CPSC proposes additional content, form, and placement provisions for on-product warnings labels. Tab E of CPSC staff's briefing package for this proposed rule includes additional details about these proposed requirements and the rationale behind them. The briefing package is available at: *http://www.cpsc.gov/Newsroom/FOIA/Commission-Briefing-Packages/.*

1. Content

CPSC proposes to require high chairs to bear labels that address the following statements:

Children have suffered skull fractures after falling from high chairs. Falls can happen quickly if child is not restrained properly.

- Always use restraints, and adjust to fit snugly. Tray is not designed to hold child in chair.
- Stay near and watch your child during use.

CPSC believes this language would be more effective than ASTM F404–15's language at reducing the risk of injury associated with falls from high chairs. CPSC developed the proposed warning language from information developed through research on the content of warnings. The proposed rule refers to ANSI Z535.4, *Product Safety Signs and Labels* (''ANSI Z535.4''), for guidance on warning label designs. ANSI Z535.4 is the primary U.S. voluntary consensus standard for product safety signs and labels. The standard is available at: *http://www.ansi.org/.* ANSI Z535.4 addresses the design, application, use, and placement of on-product warning labels. CPSC's Division of Human Factors regularly uses ANSI Z535.4.

As the staff briefing package discusses, literature and guidelines about warnings consistently recommend that on-product warnings include:

- A description of the hazard;
- information about the consequences of exposure to the hazard; and
- instructions about appropriate hazard-avoidance behaviors.

The warning statements in ASTM F404–15 lack important details regarding the hazard and its consequences, providing only a vague description of the types of injuries that may occur. As staff's briefing package for this proposed rule indicates, providing more detailed and vivid information in a warning increases its effectiveness. Accordingly, CPSC developed the proposed language, describing the specific hazard, consequent injuries, and precise actions that can help reduce the likelihood of the hazard.

As Tab E of CPSC staff's briefing package for this proposed rule discusses, incident data and other research reveals the following:

- Falls can happen quickly;
- falls occur when caregivers are not close by or watching a child;
- falls occur when caregivers do not use the restraint system;
- falls occur when caregivers do not use the restraint system properly; and
- receiving information about a hazard, its consequences, and mitigating actions, motivates appropriate behavior.

As discussed in further detail in Tab E of CPSC staff's briefing package, CPSC does not believe that ASTM F404–15 includes adequately detailed requirements to address many of these factors. To increase the effectiveness of warnings and further reduce the risk of injury, CPSC proposes the following for high chair warnings:

- A statement describing the speed with which incidents can occur;
- a detailed description of what ''attending'' means, including staying near and watching a child;
- an instruction to use the restraint system and a statement that the tray is not part of the restraint system;
- an instruction to adjust the restraints to fit the child snugly; and
- a warning statement regarding the hazard, consequences, and appropriate actions to appear together on a label.

Similarly to ASTM F404–15, CPSC proposes that for high chairs that have a seating component that is also used as a seating component for a stroller, the content of the labels must comply with ASTM F833, *Standard Consumer Safety Performance Specification for Carriages and Strollers* (''ASTM F833''). However, although ASTM F404–15 only requires compliance with section 8.2.2.2 of ASTM F833, CPSC also proposes to require the additional warning provided in section 8.2.2.1. CPSC incorporated the most recent revision of this standard (ASTM F833–13b) into 16 CFR part 1227 as the safety standard for carriages and strollers, with some modifications, effective September 10, 2015. 79 FR 13,208 (Mar. 10, 2014).

2. Form

Research indicates that the form of a warning can affect the extent to which consumers notice and read the warning. The form of a warning can also communicate the seriousness of a hazard, which can affect compliance with recommended behavior. CPSC considered research on effective forms for warnings, including the requirements in ANSI Z535.4, in developing the proposed form requirements. ASTM F404–15 does not include several of the features that have been found to be effective, including colors, contrast, typeface, and layout.

As discussed in Tab E of CPSC staff's briefing package for this proposed rule, research indicates the following points about the format of warnings:

- Certain colors, particularly red, orange, and yellow, attract attention and help convey the presence of a hazard;
- the degree of contrast contributes to readability;
- certain typeface styles, such as sentence capitalization (*i.e.*, mixed upper and lowercase) and boldface, are easier to read and more effective at highlighting information than extensive capitalization;
- left-justified text is easier to read than fully-justified text;
- condensed or narrow typeface is less effective at conveying information; and
- lists and outline formats provide for better absorption and retention of information than continuous paragraph text.

ASTM F404–15 does not include specific requirements for many of these factors. To increase the effectiveness of warnings and further reduce the risk of injury, based on this research, CPSC proposes the following for high chair warnings:

- Red, orange, or yellow on-product warnings;
- highly contrasting colors, such as black and white;
- sentence capitalization, with key phrases emphasized in boldface;
- left-justified text;
- non-condensed typeface; and
- outline format.

3. Placement

As discussed above, the warning placement and visibility requirements in ASTM F404–15 permit different portions of warning information to appear on separate labels. CPSC believes that to be most effective, all of the warning information should appear together because the hazard description and potential injuries help motivate caregivers to take the recommended actions. Similarly, CPSC believes that it is important for caregivers to be able to see the warnings when putting a child into a high chair and when the child is in it. This will remind users to use the restraint system when putting the child into the high chair and to stay near and watch the child once the high chair is in use. ASTM F404–15 only requires certain warning information to be visible when a caretaker is placing a child in the high chair, not once the chair is occupied; and the standard requires other warning information to be visible when the child is in the chair. Based on the incident data, CPSC believes it would more effectively reduce the risk of injury associated with falls from high chairs if users could see the warning after putting a child in the high chair and before leaving the child unattended. As such, CPSC proposes requiring warning labels to be visible when placing the occupant in the high chair and once the child is in the high chair.

4. Additional Guidance

CPSC also proposes to include a note in the regulatory text referencing ANSI Z535.4 for optional additional guidance. CPSC would not require compliance with ANSI Z535.4, but the standard may offer regulated entities additional useful information for developing effective labels.

C. Warnings in Instructional Literature

For reasons similar to using warnings in on-product labels, CPSC proposes more stringent requirements for warnings in instructional literature than ASTM F404–15 provides. CPSC believes that more stringent requirements will further reduce the risk of injury associated with high chairs by providing more effective warnings regarding the hazard, potential injuries, and recommended behavior. This includes requirements about the content and form of warnings in instructional literature. The discussion below provides the rationale for these more-stringent requirements, and the requirements are discussed in additional detail in Tab E of CPSC staff's briefing package for this proposed rule.

1. Content

Section 9.2 of ASTM F404–15 requires that instructional literature contain the same warnings as the warnings required on the high chair. CPSC believes that this requirement is appropriate. However, because CPSC proposes to require different on-product warning label content than ASTM F404–15, the more-stringent warning requirements also would apply to instructional literature. The Commission agrees with the additional content requirement listed in section 9.2.1 of ASTM F404–15. Therefore, CPSC does not propose to modify that requirement.

2. Form

Unlike on-product warning labels, ASTM F404–15 does not specify the form in which warning statements in instructional literature must appear. Similarly to on-product warning labels, research and guidance indicate that specific forms are more effective at conveying information. The proposed rule refers to ANSI Z535.6, *Product Safety Information in Product Manuals, Instructions, and Other Collateral Materials* (''ANSI Z535.6'') for guidance on the design and location of product safety messages in instructional literature. The standard is available at: *http://www.ansi.org/*.

CPSC proposes to require the same form requirements for warnings in instructional literature as the requirements proposed for on-product warning labels, with one exception. CPSC believes that these form requirements will further reduce the risk of injury associated with high chairs for the same reasons discussed for on-product warning labels. However, CPSC does not propose to require the use of specific colors (*i.e.*, red, orange, yellow) for warnings in instructional literature unless a manufacturer opts to use color, in which case the same color requirements as on-product labels would apply.

3. Additional Guidance

Similar to ANSI Z535.4, CPSC also proposes to include a note in the regulatory text referencing ANSI Z535.6 for optional additional guidance. CPSC would not require compliance with ANSI Z535.6, but the standard may offer regulated entities additional useful information for developing effective warnings in instructional literature.

IX. Amendment to 16 CFR Part 1112 To Include NOR for High Chair Standard

Section 14 of the CPSA establishes requirements for product testing and certification. Manufacturers of products that are subject to a consumer product safety rule under the CPSA or another rule the Commission enforces must certify, based on product testing, that their product complies with all such rules. 15 U.S.C. 2063(a)(1). Additionally, manufacturers of children's products that are subject to a children's product safety rule must have these products tested by a third party conformity assessment body that CPSC has accredited, and manufacturers must certify that their products comply with all applicable children's product safety rules. *Id.* at 2063(a)(2). The Commission must publish an NOR for the accreditation of third party conformity assessment bodies to assess conformity with a children's product safety rule. *Id.* at 2063(a)(3). Because the proposed rule is a children's product safety rule, if the Commission issues 16 CFR part 1231, *Safety Standard for High Chairs*, as a final rule, the CPSC must also issue an NOR.

The Commission published a final rule, codified at 16 CFR part 1112, titled, *Requirements Pertaining to Third Party Conformity Assessment Bodies*, which established requirements for accreditation of third party conformity assessment bodies to test for conformity with children's product safety rules in accordance with the CPSA. 78 FR 15836 (Mar. 12, 2013). Part 1112 also codifies all of the NORs the Commission previously issued.

NORs for new children's product safety rules, such as the high chair standard, require the Commission to amend part 1112. To accomplish this, as part of this NPR, the Commission proposes to amend part 1112 to add high chairs to the list of children's product safety rules for which CPSC has issued an NOR.

Test laboratories applying for acceptance as a CPSC-accepted third party conformity assessment body to test for compliance with the proposed standard for high chairs would be required to meet the third party conformity assessment body accreditation requirements in part 1112. When a laboratory meets the requirements of a CPSC-accepted third party conformity assessment body, the laboratory can apply to CPSC to have 16 CFR part 1231, *Safety Standard for High Chairs*, included in the laboratory's scope of accreditation of CPSC safety rules listed for the laboratory on the CPSC Web site at: *www.cpsc.gov/labsearch*.

X. Incorporation by Reference

Section 1231.2(a) of the proposed rule incorporates by reference ASTM F404–15. The Office of the Federal Register (''OFR'') has regulations concerning incorporation by reference. 1 CFR part 51. Under these regulations, in the preamble of the NPR, an agency must summarize the incorporated material and discuss the ways the material is reasonably available to interested parties or how the agency worked to make the materials reasonably available. 1 CFR 51.5(a).

In accordance with the OFR's requirements, section V.B. of this preamble summarizes the provisions of ASTM F404–15 that the Commission proposes to incorporate by reference. ASTM F404–15 is copyrighted. By permission of ASTM, interested parties may view the standard as a read-only document during the comment period of this NPR at: *http://www.astm.org/cpsc.htm*. Interested parties may also purchase a copy of ASTM F404–15 from ASTM International, 100 Bar Harbor Drive, P.O. Box 0700, West Conshohocken, PA 19428; *http://www.astm.org/cpsc.htm*. You may also inspect a copy at CPSC's Office of the Secretary, U.S. Consumer Product Safety Commission, Room 820, 4330 East West Highway, Bethesda, MD 20814, telephone 301–504–7923.

XI. Effective Date

The Administrative Procedure Act (5 U.S.C. 551–559) generally requires that the effective date of a rule be at least 30 days after publication of the final rule. 5 U.S.C. 553(d). To allow time for high chairs to come into compliance with the standard, the Commission proposes that the standard become effective 6 months after publication of the final rule in the **Federal Register**. Without evidence to the contrary, CPSC generally considers 6 months to be sufficient time for suppliers to come into compliance with a new standard, and 6 months is typical for other CPSIA section 104 rules. Six months is also the period that the Juvenile Products Manufacturers Association (''JPMA'') typically allows for products in the JPMA certification program to transition to a new standard once that standard is published. We also propose that the amendment to part 1112 become effective 6 months after publication of the final rule. We ask for comments on this proposed effective date.

XII. Regulatory Flexibility Act

A. Introduction

The Regulatory Flexibility Act (''RFA''; 5 U.S.C. 601–612) requires agencies to consider the impact of proposed rules on small entities, including small businesses. Section 603 of the RFA requires the Commission to prepare an initial regulatory flexibility analysis (''IRFA'') and make it available to the public for comment when the NPR is published. The IRFA must describe the impact of the proposed rule on small entities and identify significant alternatives that accomplish the statutory objectives and minimize any significant economic impact of the proposed rule on small entities. Specifically, the IRFA must discuss:

- The reasons the agency is considering the action;
- the objectives and legal basis of the proposed rule;
- the small entities that would be subject to the proposed rule and, when possible, an estimate of the number of small entities that would be impacted;
- the projected reporting, recordkeeping, and other compliance requirements of the proposed rule, including the classes of small entities subject to it and the professional skills necessary to prepare the reports or records; and
- the relevant federal rules that may duplicate, overlap, or conflict with the proposed rule. 5 U.S.C. 603.

This section summarizes the IRFA for this proposed rule. Based on CPSC's analysis, staff cannot rule out a significant economic impact for 20 of the 38 firms (53 percent) operating in the U.S. market for high chairs.

B. Market Description

CPSC identified 62 firms that supply high chairs to the U.S. market. The majority of these firms are domestic (including 27 manufacturers, 19 importers, and 5 wholesalers). The remaining 11 firms are foreign (including 9 manufacturers, 1 importer, and 1 retailer). Forty-eight of these firms market their products to consumers, while 14 firms market their products for use in commercial settings, such as restaurants, hotels, and day care centers. However, consumers are able to purchase high chairs that are generally designed and marketed for use in commercial settings; two of the firms that market their products to consumers also produce high chairs identical to the wooden high chairs used in restaurants.

C. Reason for Agency Action, Objectives, and Legal Basis for Proposed Rule

Section 104 of the CPSIA requires the CPSC to promulgate a mandatory standard for high chairs that is substantially the same as the voluntary standard or more stringent than the voluntary standard if the Commission determines that more stringent requirements would further reduce the risk of injury associated with the product.

D. Description of the Proposed Rule

CPSC proposes to adopt ASTM F404–15 with modifications to the rearward stability test and requirements for warnings on labels and instructional literature. Section V. of this preamble discusses key provisions of ASTM F404–15.

CPSC believes that the high chairs of 37 firms comply with ASTM F404. This is because JPMA has certified the high chairs supplied by 12 firms, and the remaining 25 firms state that they comply with the voluntary standard. As such, these firms will not incur additional costs to comply with the provisions of ASTM F404–15, which CPSC proposes to adopt.

In addition to incorporating ASTM F404–15 by reference, CPSC proposes to adopt modified requirements for rearward stability and warnings in labels and instructional literature because CPSC believes that more stringent standards in these areas would further reduce the risk of injury. Section VIII. of this preamble discusses these proposed provisions.

Preliminary testing by CPSC staff and other members of the ASTM task group indicates that most high chairs would pass the proposed rearward stability test, and therefore, would not require any modifications to meet the proposed standard. Through testing high chairs and other market research, staff identified only three high chairs that might not pass the modified rearward stability test, based on their design. However, CPSC expects that the cost of modifying the design to increase rearward stability would be low, and that this could likely be accomplished by adding flat supports to the bottom of each back leg.

The Commission is also proposing more stringent requirements for warnings in labels and instructional literature. All firms would be affected by the proposed requirements for warnings in labels and instructional literature. Each firm would need to modify the text and formatting of the warnings for both the product and the instructional literature. Firms would need to move warning labels to the specified location, ensuring that the warnings are visible when the child is placed in the high chair and when the child is in the high chair. If the high chair can be used with and without padding, this would require placing the warning on both the high chair and the padding. Section XII.F. of this preamble discusses staff's assessment of the impact of these proposed requirements on small entities.

E. Other Relevant Federal Rules

CPSC staff has not identified any federal or state rules that duplicate, overlap or conflict with the proposed rule.

F. Impact of the Proposed Rule on Small Businesses

CPSC is aware of approximately 62 firms currently marketing high chairs in the United States, 51 of which are domestic firms. Under U.S. Small Business Administration (''SBA'') guidelines, a high chair manufacturer is ''small'' if it has 500 or fewer employees, and importers and wholesalers are small if they have 100 or fewer employees. CPSC limited its analysis to domestic firms because SBA guidelines and definitions pertain to U.S. entities. Based on these guidelines and available information about the firms, staff has identified 38 of the 51 domestic suppliers as small (21 manufacturers, 13 importers, and 4 wholesalers). There may be additional small domestic high chair suppliers that CPSC is not aware of who are operating in the U.S. market. Table 3 lists the number of firms by category:

TABLE 3—FIRMS THAT MARKET HIGH CHAIRS IN THE U.S.

Category	Number of firms
Domestic	51
Small	38
Manufacturers	21
Compliant with ASTM F404	12
Not Compliant with ASTM F404	9
Importers and Wholesalers	17

TABLE 3—FIRMS THAT MARKET HIGH CHAIRS IN THE U.S.—Continued

Category	Number of firms
Compliant with ASTM F404	9
Not Compliant with ASTM F404	8
Large	13
Foreign	11
Total	62

1. Small Manufacturers With Compliant High Chairs

Of the 21 small manufacturers, 12 produce high chairs that comply with ASTM F404–14. In general, CPSC expects small manufacturers that already comply with the voluntary standard will continue to comply with the standard as the standard evolves because they follow, and in three cases, actively participate in ASTM's standard-development process. As such, compliance with the voluntary standard is part of these firms' established business practice. Because ASTM approved ASTM F404–15 on May 15, 2015, these firms would likely be in compliance with the standard before the proposed rule would take effect.

For this reason, the economic impact of the proposed rule should be small for 10 of the 12 small domestic manufacturers. These 10 firms include one firm that may need to modify its high chair to meet the proposed rearward stability test; as discussed above, the cost associated with this modification is likely small.

However, the proposed warning label requirements may create a significant economic impact for two small manufacturers. Both firms produce high chairs with compact designs, with one serving the commercial restaurant market. Redesigning the seat back would provide additional space for warning labels, but may reduce the chairs' compactness, which may be an important feature for marketability. For one firm, high chairs represent a small part of its product line, but it is unclear whether the firm could stop producing high chairs because CPSC was unable to obtain sales revenue information. For the second firm, high chairs represent an integral part of its commercial product line, so discontinuing that product line could create a significant economic burden. CPSC requests input on consumer preferences for compact high chairs, how compact high chair manufacturers would respond to the proposed warning label requirements, and the costs of developing a compliant product.

2. Small Manufacturers with NonCompliant High Chairs

Nine small manufacturers produce high chairs that do not comply with the voluntary standard, five who market their products for use in commercial settings, primarily in restaurants. CPSC believes it is possible that there would be a significant economic impact on some of these manufacturers. The five producers of restaurant-style high chairs would need to make several changes to meet the base requirements of ASTM F404–15. As discussed previously, different circumstances and needs exist for restaurant-style high chairs. Complying with the proposed rule may undermine some of the characteristics that make certain high chair features desirable in restaurant settings. For example, leg holes tend to be larger for restaurant-style high chairs to accommodate children clothed in outerwear and children of varied ages and sizes. The proposed standard would preclude some features.

Manufacturers of restaurant-style high chairs may also need to make changes to meet the proposed warning label requirements. For example, two firms manufacture plastic high chairs that may need to be redesigned to comply with the proposed warning label requirements.

Four firms that do not currently comply with the ASTM standard produce high chairs for home use. One of these four firms likely would need to make significant changes to its product to meet the proposed warning label requirements, given the compact design of its product. The three remaining firms appear to have sufficient room on their high chairs to accommodate the proposed warning labels without redesign, and any modifications to the high chairs would be due to the requirements of ASTM F404–15. However, CPSC staff could not determine the extent or cost of the changes that may be necessary, so we cannot rule out a significant economic impact.

CPSC requests comments on the differences between restaurant-style high chairs and high chairs produced for home use, as well as the desirability of particular features in these respective environments. CPSC also requests information about the changes that would be necessary to meet the proposed requirement, including whether redesign or retrofitting would be necessary and whether there would be any associated costs.

3. Third Party Testing Costs for Small Manufacturers

Under section 14 of the CPSA, if CPSC adopts the proposed high chair requirements, all manufacturers will be subject to the third party testing and certification requirements under 16 CFR part 1107. Third party testing would include any physical and mechanical test requirements specified in a final high chair rule. Manufacturers and importers should already be conducting required lead testing for high chairs. Third party testing costs would be in addition to the direct costs of meeting the high chair standard.

More than half of small high chair manufacturers (11 out of 21) are already testing their products to verify compliance with the ASTM standard, although not necessarily by a third party laboratory. For these manufacturers, the impact on testing costs would be limited to the difference between the cost of third party tests and the cost of current testing regimes. The suppliers that CPSC staff contacted estimate that obtaining third party testing for high chairs would cost about $600 to $900 per model sample. For manufacturers that are already testing, the incremental costs will be lower than that.

Based on CPSC staff's examination of firm revenues from recent Dun & Bradstreet or ReferenceUSAGov reports, the impact of third party testing, alone is unlikely to be economically significant for small manufacturers of noncompliant high chairs. Even without knowing how many samples would be needed to meet the ''high degree of assurance'' criterion in part 1107, more than 12 units per model would be required before testing costs exceed 1 percent of gross revenue for the small manufacturer with the lowest gross revenue. CPSC could not obtain revenue information for one small manufacturer, and therefore, could not evaluate the impact on that firm. CPSC requests comments on testing costs and incremental costs of third party testing (*i.e.,* how much does moving from a voluntary to a mandatory third party testing regime add to testing costs, in total, and on a per-test basis). In particular, CPSC requests comments on the preliminary determination that third party testing is unlikely to lead to significant economic impacts for small high chair manufacturers. In addition, CPSC would like comments about the number of high chair units that typically need to be tested to provide a ''high degree of assurance.''

4. Small Importers and Wholesalers With Compliant High Chairs

CPSC considered the economic impact to importers and wholesalers together, because both rely on outside firms to supply the products they distribute to the U.S. market. Importers distribute products made by foreign firms and are often closely related to the firms producing their products. CPSC was unable to determine the source of wholesalers' high chairs, but the sources are likely from other suppliers that may be foreign or domestic.

In the absence of a mandatory regulation, the nine firms (seven small importers and two small wholesalers) currently in compliance with the voluntary standard likely would remain in compliance with new versions. However, the high chairs these firms supply would require modifications to meet the proposed requirements. There are two firms that may require modifications to meet the rearward stability requirement (one importer and one wholesaler) but, as discussed above, these costs are likely to be low. The cost of modifying the wording and format of the warnings should be small, as well, given that such changes typically add only a few cents per unit to production costs.

The proposed placement requirements for warnings, however, could be more costly, possibly requiring firms to retrofit or redesign their high chairs. Four of the nine firms likely would have to modify the design of their high chairs to meet the proposed warnings label visibility requirement. The high chairs of two firms have compact designs, making the display of warning labels difficult. The remaining two firms provide information in a number of languages that would exceed the space available on their high chairs. Finding an alternative supply source would not be a viable alternative for three of the four firms, due to close relationships with their suppliers; however, all three firms supply a sufficient number of other products that could probably allow these firms to eliminate high chairs from their product line entirely. The fourth firm is a commercial supplier, and high chairs are an integral part of this firm's product line; therefore, exiting the high chair market would likely cause this firm to go out of business. CPSC requests comments on how importers would respond to the proposed rule and what are the costs of developing a compliant product.

5. Small Importers and Wholesalers With Noncompliant High Chairs

There is insufficient information to rule out a significant impact for any of the eight importers and wholesalers of noncompliant high chairs. Whether there would be a significant economic impact would depend upon the extent of the changes required for these firms to come into compliance and the response of their suppliers. Their suppliers may pass on to the importers and wholesalers any increase in production costs that result from the proposed changes.

Six of the eight importers and wholesalers with noncompliant high chairs do not appear to have direct ties to their product suppliers. Therefore, these firms may choose to switch to alternative suppliers or manufacture other products, rather than bear the costs of complying with the proposed standard. It is unclear whether the costs of complying with the proposed requirements would be significant for these firms. Three firms supply restaurant-style high chairs, including one plastic high chair. As such, although the three firms may find compliant high chairs from alternative supply sources, these firms would share the same concerns as restaurant-style high chair manufacturers regarding the desirability of their product to their customers. Two of the six firms supply high chairs to the consumer market that are identical to several supplied to the commercial market. Although the costs of complying with the proposed standard could be significant for these two firms, high chairs make up only a small part of their product lines. Therefore, the two firms may eliminate high chairs from their product lines or select compliant high chairs from another supplier. However, CPSC was unable to obtain sales revenue for high chairs and could not determine whether exiting the high chair market would generate significant economic impacts.

The remaining two firms are directly tied to their foreign suppliers. Therefore, finding an alternative supply source would not be a viable alternative. However, these foreign suppliers may wish to comply with the proposed requirements to continue to market their products in the United States. Although it is possible that these firms could stop selling high chairs, it is unlikely for two of these firms because high chairs represent one of only a few products in their lines. Again, CPSC could not determine whether exiting the high chair market would generate significant economic impacts, given the lack of sales revenue for high chairs.

6. Third Party Testing Costs for Small Importers and Wholesalers

As with manufacturers, all importers and wholesalers would be subject to third party testing and certification requirements, if CPSC adopts a final high chair standard. Consequently, importers and wholesalers would be subject to costs similar to manufacturers' costs if the foreign suppliers of importers and wholesalers do not obtain third party testing. Just over half of high chair importers and wholesalers (9 out of 17) already test their products to verify compliance with the ASTM standard. Any additional costs associated with a final high chair rule thus would be limited to the incremental costs of third party testing over the current testing regime.

There may be significant costs for two or three firms that do not comply with the ASTM standard to obtain third party certification. Specifically, for two firms, the cost of testing as few as three units per model could exceed 1 percent of their gross revenue. A third firm would need to test about six units per model before testing costs would exceed 1 percent of its gross revenue. CPSC was unable to obtain revenue data for one small, noncompliant importer, and therefore, could not examine the size of the impact on that firm.

7. Summary of Impacts

CPSC staff is aware of 38 small firms that currently market high chairs in the United States, of which 21 are domestic manufacturers and 17 are domestic importers or wholesalers. Of the 21 small manufacturers, 10 are unlikely to experience significant economic impacts as a result of the proposed rule. However, CPSC cannot rule out a significant economic impact for the remaining 11 manufacturers. For eight of the small importers and wholesalers, it is unlikely the proposed rule would have a significant economic impact, based on a review of firm revenues and the options available to each firm. However, it is possible that the proposed rule would have a significant economic impact on the remaining nine small importers and wholesalers. Therefore, in total, based on current information, CPSC cannot rule out a significant economic impact for 20 of the 38 firms (53 percent) operating in the U.S. high chair market.

8. Impacts of Test Laboratory Accreditation Requirements on Small Laboratories

In accordance with section 14 of the CPSA, all children's products that are subject to a children's product safety rule must be tested by a third party conformity assessment body that has been accredited by CPSC. These third party conformity assessment bodies test products for compliance with applicable children's product safety rules. Testing laboratories that want to conduct this testing must meet the NOR for third party conformity testing. CPSC has codified NORs in 16 CFR part 1112. CPSC proposes to amend 16 CFR part 1112 to establish an NOR for testing laboratories to test for compliance with the proposed high chair standard. This section assesses the impact of this proposed amendment on small laboratories.

CPSC conducted a Final Regulatory Flexibility Analysis (''FRFA'') when it adopted part 1112. 78 FR 15836 (Mar. 12, 2013). The FRFA concluded that the accreditation requirements would not have a significant adverse impact on a substantial number of small laboratories because no requirements were imposed on laboratories that did not intend to provide third party testing services. The only laboratories that were expected to provide such services were laboratories that anticipated receiving sufficient revenue from the mandated testing to justify accepting the requirements as a business decision.

For the same reasons, including the NOR for high chairs in part 1112 would not have a significant adverse impact on small laboratories. Moreover, CPSC expects that only a small number of laboratories would request accreditation to test high chairs, based on the number of laboratories that have applied for CPSC accreditation to test for conformance to other juvenile product standards. Most laboratories would already have accreditation to test for conformance to other juvenile product standards, and then the only costs would be to add the high chair standard to their scope of accreditation. Test laboratories have indicated that this cost is extremely low when they are already accredited for other CPSIA section 104 rules. Therefore, the Commission certifies that the NOR for the high chair standard will not have a significant impact on a substantial number of small entities.

G. Alternatives

At least four alternatives are available to minimize the economic impact on small entities supplying high chairs while also complying with the direction of section 104 of the CPSIA: (1) Adopt ASTM F404–15 with no modifications; (2) adopt ASTM F404–15 with the proposed modifications, except for requirements on the placement of warning labels; (3) adopt ASTM F404–15 with the proposed modifications, but exclude restaurant-style high chairs from the scope of the rule; and (4) provide a later effective date for some or all high chairs.

First, section 104 of the CPSIA directs the Commission to promulgate a standard that is either substantially the same as the voluntary standard or more stringent if the Commission determines that would further reduce the risk of injury associated with the product. Therefore, adopting ASTM F404–15 with no modifications is the least stringent rule CPSC could adopt. This alternative would reduce the economic impact on all of the small businesses supplying high chairs to the U.S. market. Although, choosing this alternative would not reduce the testing costs associated with the rule, this option would eliminate the economic impact of complying with the requirements that CPSC proposes in addition to ASTM F404–15 for many firms. Specifically, this option would eliminate the cost of complying with the additional requirements for the 10 small domestic manufacturers and 9 small importers and wholesalers with compliant high chairs, all of whom would likely comply with ASTM F404–15 by the time a CPSC final rule for high chairs would take effect. However, the requirements that CPSC proposes in addition to ASTM F404–15 would reduce the risk of injuries associated with backward tip-over incidents and fall incidents where caregivers did not use restraints or used the restraints improperly. Adopting ASTM F404–15 with no modifications would not meet these objectives.

Second, the Commission could reduce impacts to small businesses by adopting ASTM F404–15 with the proposed modifications, except for the requirement regarding the placement and visibility requirements for warning labels. One option is to require warning labels to be visible only as a child is being placed into the high chair. This would reduce the proportion of high chair models with backs that would need to be redesigned and expanded to accommodate labels that are visible when the high chair is occupied. Another option would be to allow duplicate labels. Manufacturers could place one label on the front seat back, which would be visible when the child is placed in the seat, and manufacturers could place a second label in a location that is visible when the child is in the high chair. This alternative would reduce the economic impact on compact high chairs or high chairs with smaller backs.

Third, because a substantial portion of the economic impact of the proposed rule would fall on small, restaurant-style high chair suppliers, CPSC could exclude restaurant-style high chairs from this rule. Restaurant settings have unique requirements, including a need for smaller high chairs and to accommodate children of various sizes. It would be difficult to retain these features and comply with the proposed requirements. Moreover, CPSC has identified only a few injuries that involved high chairs in restaurant settings. Therefore, the reduction in safety benefits associated with limiting the rule's scope likely would be minimal.

If restaurants could no longer provide high chairs with the desirable attributes, restaurants may stop providing high chairs for customers, which could result in customers using less safe options, such as placing infant carriers on tables or chairs, or using booster seats for children under the appropriate age. CPSC requests comments on the potential impact of excluding restaurant-style high chairs from the proposed rule, including cost and safety impacts.

Because restaurant-style high chairs are also available to consumers for home use, CPSC could take steps to reduce the potential safety risks of these high chairs through other means. For example, CPSC could require restaurant-style high chair suppliers to label their products: ''not intended for home use.'' Additionally, CPSC could develop separate warning label requirements for these products to inform users of the specific hazard patterns related to restaurant-style high chairs. ASTM could also develop requirements specific to restaurant-style high chairs. CPSC requests comments on the possibility of excluding restaurant-style high chairs from the proposed requirements, including the implications for safety and costs.

Fourth, the Commission could reduce the economic impact of the proposed rule on small businesses by setting a later effective date for some or all high chairs. A later effective date would reduce the economic impact on firms in two ways. First, firms would be less likely to experience a lapse in production or imports that could result if they are unable to come into compliance and secure third party testing within the required timeframe. Second, firms could spread costs over a longer period, thereby reducing annual costs, as well as the present value of total costs. CPSC requests comments on the 6-month effective date, as well as feedback on how firms likely would address the proposed rule. CPSC could also consider a longer effective date for firms that supply restaurant-style high chairs. However, this may not reduce the economic impact on these firms because the primary cost issue for them is the utility of their high chairs, not the time needed to comply with the standard. Nevertheless, CPSC requests comments, particularly from restaurants and other commercial establishments, on the validity of this conclusion.

XIII. Environmental Considerations

The Commission's regulations outline the types of agency actions that require an environmental assessment (''EA'') or environmental impact statement (''EIS''). Rules that have ''little or no potential for affecting the human environment'' fall within a ''categorical exclusion'' under the National Environmental Policy Act (''NEPA''; 42 U.S.C. 4231–4370h) and the regulations implementing NEPA (40 CFR parts 1500–1508) and do not normally require an EA or EIS. As stated in 16 CFR 1021.5(c)(1), rules or safety standards that provide design or performance requirements for products fall within that categorical exclusion. Because this proposed rule would create design and performance requirements for high chairs, the proposed rule falls within the categorical exclusion, and thus, no EA or EIS is required.

XIV. Paperwork Reduction Act

This proposed rule contains information collection requirements that are subject to public comment and review by the Office of Management and Budget (''OMB'') under the Paperwork Reduction Act of 1995 (''PRA''; 44 U.S.C. 3501–3521). Under 44 U.S.C. 3507(a)(1)(D), an agency must publish the following information:

- a title for the collection of information;
- a summary of the collection of information;
- a brief description of the need for the information and the proposed use of the information;
- a description of the likely respondents and proposed frequency of response to the collection of information;
- an estimate of the burden that shall result from the collection of information; and
- notice that comments may be submitted to OMB.

In accordance with this requirement, the Commission provides the following information:

Title: Safety Standard for High Chairs

Description: The proposed rule would require each high chair to comply with ASTM F404–15, with additional requirements regarding rearward stability and warnings in labels and instructional literature. Sections 8 and 9 of ASTM F404–15 contain requirements for labels and instructional literature. These requirements fall within the definition of ''collection of information'' provided in the PRA at 44 U.S.C. 3502(3).

Description of Respondents: Persons who manufacture or import high chairs.

Estimated Burden: CPSC estimates the burden of this collection of information as follows:

TABLE 4—ESTIMATED ANNUAL REPORTING BURDEN

16 CFR section	Number of respondents	Frequency of responses	Total annual responses	Hours per response	Total burden hours
1231.2	62	2	124	1	124

CPSC's estimate is based on the following:

Section 8.1 of ASTM F404–15 requires that the name and address (city, state, and zip code) of the manufacturer, distributor, or seller be marked on each high chair. Section 8.2 of ASTM F404–15 requires a code mark or other product identification on each high chair and the high chair's package that indicates the date (month and year) of manufacture.

Sixty-two known entities supply high chairs to the U.S. market and may need to modify their existing labels to comply with ASTM F404–15. CPSC estimates that the time required to make these modifications is about 1 hour per model. Based on an evaluation of supplier product lines, each entity supplies an average of two models of high chairs. Therefore, the estimated burden associated with labels is 1 hour per model × 62 entities × 2 models per entity = 124 hours. CPSC estimates the hourly compensation for the time required to create and update labels is $30.19 (U.S. Bureau of Labor Statistics, ''Employer Costs for Employee Compensation,'' Mar. 2015, Table 9, total compensation for all sales and office workers in goods-producing private industries: *http://www.bls.gov/ncs/).* Therefore, the estimated annual cost associated with the proposed labeling requirements is $3,743.56 ($30.19 per hour × 124 hours = $3,743.56). No operating, maintenance, or capital costs are associated with the collection.

Section 9.1 of ASTM F404–15 requires instructions to be supplied with a high chair. High chairs are products that generally require use and assembly instructions. As such, high chairs sold without use and assembly instructions would not be able to compete successfully with high chairs that supply this information. Under OMB's regulations, the time, effort, and financial resources necessary to comply with a collection of information incurred by parties in the ''normal course of their activities'' are excluded from a burden estimate when an agency demonstrates that the disclosure activities required are ''usual and customary.'' 5 CFR 1320.3(b)(2). CPSC is unaware of high chairs that generally require use or assembly instructions but lack such instructions. Therefore, CPSC estimates that no burden hours are associated with section 9.1 of ASTM F404–15, because any burden associated with supplying instructions with high chairs would be ''usual and customary,'' and thus, excluded from ''burden'' estimates under OMB's regulations.

Based on this analysis, the proposed standard for high chairs would impose a burden to industry of 124 hours at a cost of $3,743.56 annually.

CPSC has submitted the information collection requirements of this rule to OMB for review in accordance with PRA requirements. 44 U.S.C. 3507(d). CPSC requests interested parties submit comments regarding information collection to the Office of Information and Regulatory Affairs, OMB (see the **ADDRESSES** section at the beginning of this notice). Pursuant to 44 U.S.C. 3506(c)(2)(A), the Commission invites comments on:

- whether the proposed collection of information is necessary for the proper performance of CPSC's functions, including whether the information will have practical utility;
- the accuracy of CPSC's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used;
- ways to enhance the quality, utility, and clarity of the information the Commission proposes to collect;

• ways to reduce the burden of the collection of information on respondents, including the use of automated collection techniques, when appropriate, and other forms of information technology; and

• the estimated burden hours associated with modifying labels and instructional literature, including any alternative estimates.

XV. Preemption

Under section 26(a) of the CPSA, no state or political subdivision of a state may establish or continue in effect a requirement dealing with the same risk of injury as a federal consumer product safety standard under the CPSA unless the state requirement is identical to the federal standard. 15 U.S.C. 2075(a). States or political subdivisions of states may, however, apply to the Commission for an exemption, allowing them to establish or continue such a requirement if the state requirement provides a significantly high degree of protection from the risk of injury and does not unduly burden interstate commerce. *Id.* at 2075(c).

One of the functions of the CPSIA was to amend the CPSA, adding several provisions to CPSA, including CPSIA section 104 in 15 U.S.C. 2056a. As such, consumer product safety standards that the Commission creates under CPSIA section 104 are covered by the preemption provision in the CPSA. Consequently, the rule proposed in this NPR would be a federal consumer product safety standard, and the preemption provision in section 26 of the CPSA would apply.

XVI. Request for Comments

This NPR begins a rulemaking proceeding under section 104(b) of the CPSIA to issue a consumer product safety standard for high chairs and to amend part 1112 to add high chairs to the list of children's product safety rules for which CPSC has issued an NOR. We invite all interested persons to submit comments on any aspect of the proposed mandatory safety standard for high chairs and on the proposed amendment to part 1112. Specifically, the Commission requests comments on the following:

• the requirements in ASTM F404–15, including their effectiveness in addressing the risk of injury associated with high chairs and the costs of complying with these requirements;

• the additional requirements proposed for rearward stability, including its effectiveness in addressing the risk of injury associated with rearward tip-overs and the costs of complying with these requirements;

• the additional requirements proposed for warnings in labels and instructional literature, including their effectiveness at addressing the risk of injury associated with falls from high chairs and the costs of complying with these requirements;

• whether application of different requirements to restaurant-style high chairs is appropriate, relevant safety implications, and options for applying distinct standards;

• the costs to small businesses associated with the requirements proposed in this NPR, including the costs to comply with the proposed rearward stability requirements, content and form requirements for labels and instructional literature, and placement requirements for labels;

• alternatives to the proposed standard that would reduce impacts on small businesses;

• the proposed effective date and whether an extended effective date would further mitigate the impact on small businesses and to what extent; and

• any additional information relevant to the issues discussed in this NPR and the proposed requirements.

During the comment period, ASTM F404–15 is available for review. Please see section X. for instructions on viewing it.

Please submit comments in accordance with the instructions in the **ADDRESSES** section at the beginning of this NPR.

List of Subjects

16 CFR Part 1112

Administrative practice and procedure, Audit, Consumer protection, Reporting and recordkeeping requirements, Third party conformity assessment body.

16 CFR Part 1231

Consumer protection, Imports, Incorporation by reference, Infants and children, Labeling, Law enforcement, and Toys.

For the reasons discussed in the preamble, the Commission proposes to amend Title 16 of the Code of Federal Regulations as follows:

PART 1112—REQUIREMENTS PERTAINING TO THIRD PARTY CONFORMITY ASSESSMENT BODIES

■ 1. The authority citation for part 1112 continues to read as follows:

Authority: Pub. L. 110–314, section 3, 122 Stat. 3016, 3017 (2008); 15 U.S.C. 2063.

■ 2. Amend § 1112.15 by adding paragraph (b)(44) to read as follows:

§ 1112.15 When can a third party conformity assessment body apply for CPSC acceptance for a particular CPSC rule or test method?

* * * * *

(b) * * *

(44) 16 CFR part 1231, Safety Standard for High Chairs.

* * * * *

■ 3. Add part 1231 to read as follows:

PART 1231–SAFETY STANDARD FOR HIGH CHAIRS

Sec.

Authority: The Consumer Product Safety Improvement Act of 2008, Pub. L. 110–314, § 104, 122 Stat. 3016 (August 14, 2008); Pub. L. 112–28, 125 Stat. 273 (August 12, 2011).

§ 1231.1 Scope.

This part establishes a consumer product safety standard for high chairs.

§ 1231.2 Requirements for high chairs.

(a) Except as provided in paragraphs (b) through (e) of this section, each high chair must comply with all applicable provisions of ASTM F404–15, Standard Consumer Safety Specification for High Chairs, approved on May 15, 2015. The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may obtain a copy from ASTM International, 100 Bar Harbor Drive, P.O. Box 0700, West Conshohocken, PA 19428; http://www.astm.org/cpsc.htm. You may inspect a copy at the Office of the Secretary, U.S. Consumer Product Safety Commission, Room 820, 4330 East West Highway, Bethesda, MD 20814, telephone 301–504–7923, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

(b) Instead of complying with section 6.5 of ASTM F404–15, comply with the following:

(1) 6.5.1 *Forward and sideways stability*—A chair shall not tip over when forces are applied in accordance with 7.7.2.4 and 7.7.2.5.

(2) 6.5.2 *Rearward stability*—When tested in accordance with 7.7.2.6 (paragraph (c)(3) of this section), a high chair shall not have a Rearward Stability Index of 50 or more.

(c) For rearward stability testing, instead of complying with sections 7.7.2.1, 7.7.2.2, and 7.7.2.6 of ASTM F404–15, comply with the following:

(1) 7.7.2.1 Place the high chair in a manufacturer's recommended use position with all legs on a level floor and with the seat back adjusted into the most upright position. Attach the tray in the rear position, closest to the high chair seat back. For high chairs with height-adjustable seats, adjust the seat into the highest manufacturer's recommended use position or the position deemed most likely to fail. If a high chair has lockable wheels, those wheels shall be locked during stability testing.

(2) 7.7.2.2 Place the high chair on a rigid, horizontal test surface covered with 60 grit sandpaper or equivalent to prevent the chair from sliding on the test surface during the test. If a high chair slides on the test surface during the test or has wheels that do not lock, place a stop on the test surface to prevent sliding during the test. The stop shall be low profile, minimum height required to prevent sliding, and shall not inhibit the tipping of the high chair or affect the test results.

(3) 7.7.2.6 *Rearward stability—*

(i) 7.7.2.6.1 Attach a force gauge to the rear surface of the seat back at the lateral centerline and 7 ¼ in. (184 mm) above the occupant seating surface as shown in Figure 1. For high chairs with a seat back 7 ¼ in. (184 mm) high or less, attach the force gauge at the lateral centerline and top surface of the seat back.

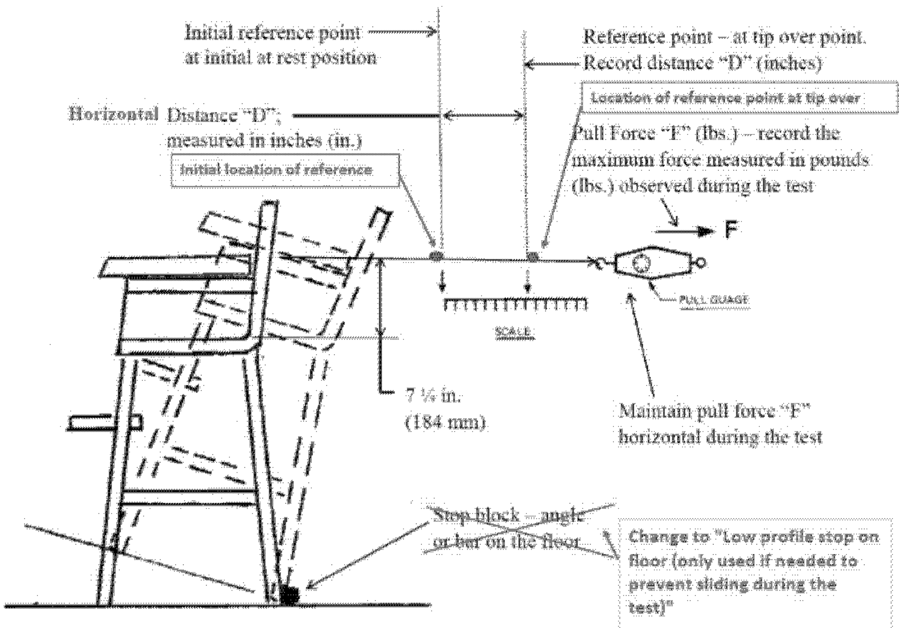

FIGURE 1.—*Rearward Stability Test*

(ii) 7.7.2.6.2 With the high chair in the at rest position, gradually apply a preload force "F" of 3 lbf (13 N) to the seat back surface of the high chair and while maintaining the force, establish the initial location of a reference point some distance away from the force gauge as shown in Figure 1.

(iii) 7.7.2.6.3 Gradually increase the horizontal force over a period of at least 5 seconds and continue to pull the high chair rearward until the high chair reaches the point that it becomes unstable and is on the verge of tipping over. Record the maximum force "F" in pounds (lbs.) applied during the test and the horizontal distance "D" in inches (in.) from the initial location of the reference point to the location of the reference point where the high chair becomes unstable and is on the verge of tipping over. Force "F" shall be maintained in a horizontal direction throughout the test.

(iv) 7.7.2.6.4 Calculate the Rearward Stability Index using the formula shown below.

Rearward Stability Index = $2F + D$
Force "F" is measured in pounds (lbs.).
Distance "D" in measured in inches (in.)

(d) Instead of complying with section 8.4 of ASTM F404–15, comply with the following:

(1) 8.4 *Warning Statements—Each Product Shall Have Warning Statements:*

(i) 8.4.1 The warnings shall be easy to read and understand and be in the English language at a minimum.

(ii) 8.4.2 Any labels or written instructions provided in addition to those required by this section shall not contradict or confuse the meaning of the required information, or be otherwise misleading to the consumer.

(iii) 8.4.3 The warning statements shall be conspicuous, in highly contrasting color(s) (*e.g.,* black text on a white background), permanent, and in non-condensed sans serif style type.

(iv) 8.4.4 Each warning statement or group of warning statements shall be preceded by the Safety Alert Symbol

""

and the signal word "WARNING" in bold uppercase letters. If warnings are placed directly under or adjacent to one another, then the safety alert symbol and the signal word WARNING need to be displayed only once. The Safety Alert Symbol

""

and the signal word "WARNING" shall not be less than 0.2 in. (5 mm) high and the remainder of the text shall be in characters whose uppercase shall not be less than 0.1 in. (2.5 mm) high. The height of the safety alert symbol shall equal or exceed the signal word height.

(v) 8.4.5 The safety alert symbol

"⚠"

and the signal word ''WARNING'' shall be in contrasting color to the background and delineated with solid black line borders. The background color behind the safety alert symbol

"⚠"

and the signal word ''WARNING'' shall be orange, red, or yellow, whichever provides the best contrast against the product background. The signal word ''WARNING'' and the solid triangle portion of the safety alert symbol

"⚠"

shall be black. The exclamation mark of the safety alert symbol

"⚠"

shall be the same color as the background. The remainder of the text shall be black, with key words highlighted using boldface, on a white background surrounded by a solid black line border. This text also shall be left-justified, in upper and lowercase letters (*i.e.,* sentence capitalization), and in list or outline format, with precautionary statements indented from hazard statements and preceded with bullet points. An example label in the format described in this section is shown in Figure 2.

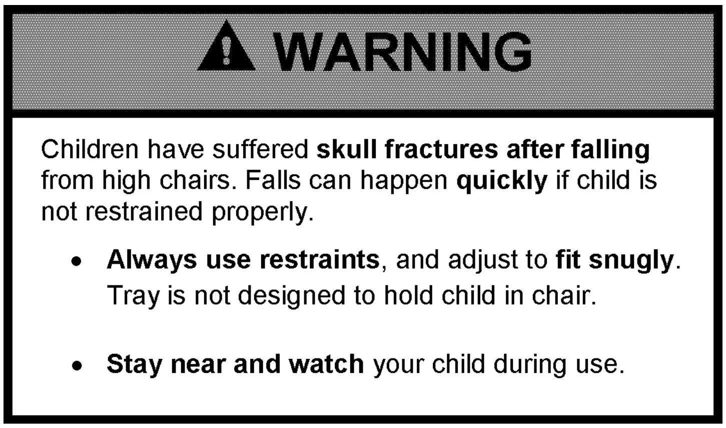

FIGURE 2.—*Label Format Example*

Note: For optional additional guidance on the design of warnings, see the most-recent edition of ANSI Z535.4, *Product Safety Signs and Labels,* American National Standards Institute, Inc., available at *http://www.ansi.org/.*

(vi) 8.4.6 The warning statements shall be in a location that is visible by the caregiver while placing the occupant into the high chair in each of the manufacturer's recommended use positions.

(vii) 8.4.7 High chairs that do not have a seating component that is also used as a seating component of a stroller, shall, in the same label, address the following warning statements:

Children have suffered skull fractures after falling from high chairs. Falls can happen quickly if child is not restrained properly.

• Always use restraints, and adjust to fit snugly. Tray is not designed to hold child in chair.

• Stay near and watch your child during use.

(viii) 8.4.8 High chairs that have a seating component that is also used as a seating component of a stroller shall use the warning statements as specified in subsections 8.2.2.1 and 8.2.2.2 of the version of the standard that is incorporated by reference in part 1227 of this subchapter, in place of the warning statements in 8.4.7 (paragraph (d)(vii) of this section).

(e) Instead of complying with section 9.2 of ASTM F404–15, comply with the following:

(1) 9.2 The instructions shall contain the warnings as specified in section 8.4 (paragraph (d)(1) of this section). Additional warnings similar to the statements included in this section shall also be included. These required warning statements shall meet the requirements described in section 8.4 (paragraph (d)(1) of this section), except for the color requirements (*i.e.,* the background of the signal word panel need not be orange, red, or yellow). However, the warning statements still must be in highly contrasting color(s) (*e.g.,* black text on a white background), and if color is used, those colors must meet the color requirements specified in section 8.4 (paragraph (d)(1) of this section).

(2) Reference to section 9.2 of ASTM F404–15 in paragraph (e) of this section includes only the introductory paragraph of section 9.2 and does not include subsections 9.2.1 or 9.2.2 of ASTM F404–15.

Note: For optional additional guidance on the design of warnings for instructional literature, see the most-recent addition of ANSI Z535.6, *Product Safety Information in Product Manuals, Instructions, and Other Collateral Materials,* American National Standards Institute, Inc., available at *http://www.ansi.org/.*

Dated: November 2, 2015.

Todd A. Stevenson,

Secretary, Consumer Product Safety Commission.

[FR Doc. 2015–28300 Filed 11–6–15; 8:45 am]

BILLING CODE 6355–01–P

DEPARTMENT OF THE INTERIOR

Bureau of Indian Affairs

25 CFR Part 30

[167 A2100DD/AAKC001030/A0A501010.999900]

Notice of Intent To Establish a Negotiated Rulemaking Committee

AGENCY: Bureau of Indian Education, Interior.

ACTION: Notice of intent; request for nominations for tribal representatives; and comments.

SUMMARY: The Bureau of Indian Education (BIE) is announcing its intent to establish an Accountability Negotiated Rulemaking Committee (Committee). The Committee will

recommend revisions to the existing regulations for BIE's accountability system. As required by applicable statutes, the Secretary will select representatives of Indian tribes for the Committee from among individuals nominated by tribes whose students attend BIE-funded schools operated by either the BIE or by the tribe through a contract or grant and who would be affected by a final rule. The BIE also solicits comments on the proposal to establish the Committee, including comments on additional interests not identified in this notice of intent, and invites tribes to nominate representatives for membership on the Committee.

DATES: Submit nominations for Committee members or written comments on this notice of intent on or before December 24, 2015.

ADDRESSES: You may submit nominations for Committee members or written comments on this notice of intent by any of the following methods:

- Send comments or nominations to Ms. Sue Bement, Designated Federal Officer, Bureau of Indian Education, 1011 Indian School Road NW., Suite 332, Albuquerque, New Mexico, 87104; email: *AYPcomments@bia.gov*; Telephone: (505) 563–5274; Fax: (505) 563–5281; or
- Hand-carry comments or use an overnight courier service to Manuel Lujan Jr. Building, Building II, Suite 332, 1011 Indian School Road NW., Suite 332, Albuquerque, New Mexico 87104.

FOR FURTHER INFORMATION CONTACT: Ms. Sue Bement, Designated Federal Officer; Telephone: (505) 563–5274; Fax (505) 563–5281.

SUPPLEMENTARY INFORMATION:

I. Background

Under the Elementary and Secondary Education Act of 1965 (ESEA), student achievement data is used to determine whether schools are successfully educating their students. Under current law, this accountability measure is Adequate Yearly Progress (AYP). The law requires States to use a single accountability system for schools to determine whether all students, as well as individual subgroups of students, are making progress toward meeting State academic content standards. The goal, as stated in the ESEA, was to have all students reaching proficient levels in reading and math by 2014 as measured by performance on State tests. The ESEA requires the Bureau of Indian Affairs to promulgate regulations through negotiated rulemaking for the accountability system to be used in Bureau-funded schools. See 20 U.S.C. 6316(g)(1)(A)(i); 25 U.S.C. 2017–2018.

In 2005, BIA promulgated such regulations. *See* 70 FR 22178 (April 28, 2005). These regulations, codified at 25 CFR 30.104, require BIE to use the accountability system of the State in which a BIE-funded school is located.

The BIE-funded schools are located in 23 different States; and each State has its own accountability system. As a result, each State system produces student achievement data that cannot be directly compared with data from other States. For BIE, comparison is necessary to identify under-performing schools and direct resources effectively. Regardless of whether AYP continues to be the accountability measure required under law, BIE must address this deeply fragmented accountability system through negotiated rulemaking to create a more cohesive accountability system.

The BIE had previously developed a method for comparing academic achievement across States despite the variances in academic standards. Beginning in 2011, the U.S. Department of Education began to grant flexibility waivers to States for certain provisions of ESEA, which has complicated the method BIE uses to effectively compare achievement. It is necessary, therefore, to revise 25 CFR Part 30, and to receive recommendations from a negotiated rulemaking committee on how BIE can compare academic achievement across the 23 States.

This rulemaking would not change the existing authority for tribes to adopt their own tribal definition of AYP. The BIE encourages tribal self-determination in Native education, encouraging tribes to develop alternative accountability systems (and definitions of AYP) and providing technical assistance. For example, on June 1, 2015, U.S. Education Secretary Arne Duncan and Interior Secretary Sally Jewell announced that the Miccosukee Indian School received flexibility from the Elementary and Secondary Education Act (ESEA) to use a definition of AYP that meets their students' unique academic and cultural needs. Local tribal communities know best what their children need, and BIE prioritizes tribal self-determination in Indian education. This rulemaking aims only to make the existing system more effective and efficient. It would impact only those BIE-funded schools that do not wish to develop alternative definitions of AYP, though the option will remain open to them regardless.

In 2012, BIE conducted four regional meetings on the topic of accountability in BIE-funded schools. Meetings were held in Oklahoma City, Oklahoma, on July 17, 2012; Flagstaff, Arizona, on July 20, 2012; Seattle, Washington, on July 24, 2012; and Bismarck, North Dakota, on July 27, 2012. Transcripts of those meetings can be referenced at *http://www.bie.edu/consultation/index.htm*.

During the four meetings, BIE received feedback from the tribes on the ESEA Flexibility Request and the BIE's proposed flexibility waiver. At the consultation sessions, BIE and the tribes discussed adopting Common Core standards—initially in reading, language arts, and mathematics—to reflect tribal values and employ a single assessment system for all BIE-funded schools.

II. Statutory Provisions

The Negotiated Rulemaking Act of 1996 (NRA) (5 U.S.C. 561 *et seq.*); the Federal Advisory Committee Act (FACA) (5 U.S.C. Appendix 2); and the NCLB (20 U.S.C. 2000 *et seq.*)

III. The Committee and Its Process

In a negotiated rulemaking, recommended provisions of a proposed rule are developed by a committee composed of at least one representative of the Federal Government and representatives of the interests that will be significantly affected by the rule. Decisions are made by consensus, which means unanimous concurrence among the interests represented on the Committee, unless the Committee agrees to define ''consensus'' to mean a general but not unanimous concurrence, or agrees upon another specified definition. 5 U.S.C. 562(2)(A) and (B).

As part of the negotiated rulemaking process, BIE has identified interests potentially affected by the rulemaking under consideration, including students enrolled at 174 BIE-funded schools, parents of such students, school administrators, Tribes, and the Indian communities served by these schools. By this notice of intent, BIE is soliciting: (1) comments on its proposal to form a negotiated rulemaking committee; and (2) nominations for Committee members who will adequately represent the interests that are likely to be significantly affected by the proposed rule.

Following the receipt of nominations and comments, BIE will publish a second notice in the **Federal Register** with a list of persons to represent the interests that are likely to be significantly affected by the rule, and the person or persons proposed to represent BIE. Persons who will be significantly affected by the proposed rule and who believe that their interests will not be adequately represented by any person specified in that second **Federal Register** notice will be given an opportunity to apply or nominate another person for membership on the negotiated rulemaking committee to represent such interests with respect to the proposed rule.

Following the second **Federal Register** notice and responses to it, BIE expects to establish the Committee. After the Committee reaches consensus on the recommended provisions of the proposed rule, as discussed in more detail below, BIE will publish a proposed rule in the **Federal Register**.

Under 5 U.S.C. 563, the head of the agency is required to determine that the use of the negotiated rulemaking procedure is in the public interest.

In making such a determination, the agency head must consider certain factors. Taking these factors into account, the Secretary, through the authority delegated to the Assistant Secretary—Indian Affairs, has determined that a negotiated rulemaking is in the public interest because:

1. A rule is needed. The ESEA directs the Secretary to conduct a negotiated rulemaking pursuant to the NRA. The current definition of AYP creates a fragmented accountability system that prevents the BIE from developing and implementing comprehensive school reform initiatives in the 174 BIE-funded schools with academic programs in 23 States.

2. A limited number of identifiable interests will be significantly affected by the rule. The 174 BIE-funded schools, students enrolled at these schools, school teachers and administrators, tribes, and Indian communities served by these schools will be significantly affected by this review and the recommendations made by this Committee.

3. There is a reasonable likelihood that the Committee can be convened with a balanced representation of persons who can adequately represent the interests discussed in item 2, above, and who are willing to negotiate in good faith to attempt to reach a consensus on provisions of a proposed rule.

4. There is a reasonable likelihood that the Committee will reach consensus on a proposed rule within a fixed period of time.

5. The use of negotiated rulemaking will not unreasonably delay the development of a proposed rule because time limits will be placed on the negotiation. We anticipate that these negotiations will expedite a proposed rule and ultimately the acceptance of a final rule.

6. The BIE is making a commitment to ensure that the Committee has sufficient resources to complete its work in a timely fashion.

7. The BIE, to the maximum extent possible and consistent with the legal obligations of the Agency, will use the consensus report of the Committee as the basis for a proposed rule for public notice and comment.

IV. Negotiated Rulemaking Procedures

In compliance with FACA and NRA, BIE will use the following procedures and guidelines for this negotiated rulemaking. The BIE may modify them in response to comments received on this notice of intent or during the negotiation process.

A. Committee Formation

The Committee will be formed and operated in full compliance with the requirements of FACA and NRA, and specifically under the guidelines of its charter.

B. Membership Responsibility

The Committee is expected to meet approximately 3–5 times. The meetings will be held at various locations across Indian Country, and will last 2–3 days each. The initial meeting will be in person; some later meetings may be held by teleconference and/or web-conference. The Committee's work is expected to occur over the course of 6–12 months. However, the Committee may continue its work for a duration of two years.

Because of the scope and complexity of the tasks at hand, committee members must be able to invest considerable time and effort in the negotiated rulemaking process. Committee members must be able to attend all committee meetings, work on committee work groups, consult with their constituencies between committee meetings, and negotiate in good faith toward a consensus on issues before the Committee. Because of the complexity of the issues under consideration, as well as the need for continuity, the Secretary reserves the right to replace any member who is unable to participate in the Committee's meetings.

Responsibility for expenses is stated under 5 U.S.C. 568(c) as follows:

Members of a negotiated rulemaking committee shall be responsible for their own expenses of participation in such committee, except that an Agency may, in accordance with section 7(d) of the FACA, pay for a member's reasonable travel and per diem expenses, expenses to obtain technical assistance, and a reasonable rate of compensation, if—

1. Such member certifies a lack of adequate financial resources to participate in the Committee; and

2. The agency determines that such members participation in the Committee is necessary to assure an adequate representation of the members interest.

The BIE commits to pay the reasonable travel and per diem expenses of Committee members, if appropriate under the NRA and Federal travel regulations.

C. Composition of Committee

The Secretary is seeking nominations submitted by Tribes for tribal representatives, consistent with the provisions of 25 U.S.C. 2018, to serve on the Committee, who have a demonstrated ability to communicate well with groups about the interests they will represent. The Committee cannot exceed 25 members, and BIE prefers 15.

Tribal Committee membership must:

- Include only representatives of Tribes served by BIE-funded schools;
- Be selected from among individuals nominated by the Tribes that have students attending BIE-funded schools;
- Reflect the proportionate share of students from Tribes served by the BIE-funded school system; and
- Comply with the FACA

Section 2018 of Title 25 also requires the Secretary to ensure that the various interests affected by the proposed report(s) or rules be represented on the Committee. In making membership decisions, the Secretary shall consider whether the interest represented by a nominee will be affected significantly by the final products of the Committee, which may include report(s) and/or proposed regulations; whether that interest is already adequately represented by tribal nominees; and whether the potential addition would adequately represent that interest. Federally registered lobbyists are ineligible to serve on all FACA and non-FACA boards, committees, or councils in an individual capacity. The term ''individual capacity'' refers to individuals who are appointed to exercise their own individual best judgment on behalf of the government, such as when they are designated Special Government Employees, rather than being appointed to represent a particular interest.

D. Administrative and Technical Support

The BIE will provide sufficient administrative and technical resources for the Committee to complete its work in a timely fashion. The BIE, with the help of the facilitator, will prepare all agendas, provide meeting notes, and provide a final report of any issues on which the Committee reaches consensus.

E. Training and Organization

At the first meeting of the Committee, a neutral facilitator will provide training on negotiated rulemaking, interests-based negotiations, consensus-building, and team-building. In addition, at the first meeting, Committee members will make organizational decisions concerning protocols, scheduling, and facilitation of the Committee.

F. Interests Identified Through Consultation

Under Section 562 of the NRA, "'interest' means, with respect to an issue or matter, multiple parties which have a similar point of view or which are likely to be affected in a similar manner." The BIE has consulted with BIE personnel and educators at BIE-funded schools. Through these and previous consultations, such as those conducted in 2012 for an Elementary and Secondary Education Act Flexibility Waiver Request, BIE has identified interests to be significantly affected by this new rule that include students enrolled at 174 BIE-funded schools, parents of such students, school administrators, tribes, and the Indian communities served by these schools. The BIE is accepting comments identifying other interests that may be significantly affected by the final products of the Committee, which may include report(s) and/or proposed regulations, until the date listed in the **DATES** section of this notice of intent.

V. Request for Nominations and Comments

The BIE solicits nominations from tribes whose students attend BIE-funded schools operated either by BIE or by the tribe through a contract or grant, to nominate tribal representatives to serve on the Committee and tribal alternates to serve when the representative is unavailable. Based upon the proportionate share of students, some tribes similar in affiliation or geography are grouped together for one seat. It will be necessary for such nominating tribes either to co-nominate a single tribal representative to represent the multi-tribal jurisdiction or for each tribe in the multi-tribal jurisdiction to nominate a representative with the knowledge that BIE will be able to appoint only one of the nominees who will then be responsible for representing the entire multi-tribal jurisdiction on the Committee. (See chart below for jurisdictions.)

Tribes	Student count school year 2013–2014	Percent of total student count	% Times 15 seats total	Suggested seats
Navajo Nation Tuba City Agency Western (AZ)	3,727			
Navajo Nation Crown Point Agency Eastern (NM)	3,642			
Navajo Nation Chinle Agency (AZ)	3,216			
Navajo Nation Fort Defiance Agency (AZ)	2,437			
Navajo Nation Shiprock Agency (AZ)	1,870			
Total Navajo Nation	14,892	32.70	4.91	5
Oglala Sioux Tribe of the Pine Ridge Reservation(SD)	2,994			
Cheyenne River Sioux (SD)	1,280			
Rosebud Sioux Tribe (SD)	896			
Standing Rock Sioux Tribe (ND)	989			
Sisseton-Wahpeton Sioux of Lake Traverse Res. (SD)	797			
Spirit Lake Tribe (Devils Lake Sioux Tribe) (ND)	615			
Total Sioux Tribes	7,571	16.63	2.49	2
The Hopi Tribe (AZ)	1,465			
Pueblo of Acoma	251			
Pueblo of Chochiti	23			
Pueblo of Isleta	175			
Pueblo of Jemez	165			
Pueblo of Laguna	386			
Pueblo of Nambe	12			
Pueblo of Picuris	5			
Pueblo of Pojoaque	5			
Pueblo of San Felipe	447			
Pueblo of San Ildefonso	38			
Pueblo of San Juan	171			
Pueblo of Sandia	2			
Pueblo of Santa Ana	7			
Pueblo of Santa Clara	134			
Pueblo of Santo Domingo	210			
Pueblo of Taos	151			
Pueblo of Tesuque	43			
Pueblo of Zia	84			
Total Hopi and Pueblo Tribes	3,774	8.29	1.24	1
Bad River Band of the Lake Superior Tribe (WI)	10			
Bay Mills (MI)	11			
Chippewa-Cree (MT)	24			
Grand Traverse Band of Ottawa & Chippewa (MI)	4			
Keweenaw Bay of L'Anse and Ontonagon of Chippewa (MI)	1			
Lac Courte Oreilles of Lake Superior Chippewa (WI)	227			

Tribes	Student count school year 2013–2014	Percent of total student count	% Times 15 seats total	Suggested seats
Lac du Flambeau of Lake Superior Chippewa (WI)	13			
Minnesota Chippewa Bois Forte Band (Nett Lake)	18			
Minnesota Chippewa Fond du Lac Band	167			
Minnesota Chippewa Leech Lake Band	143			
Minnesota Chippewa Mille Lacs Band	207			
Minnesota Chippewa Red Lake of Chippewa Indians	75			
Minnesota Chippewa Tribe, MN—6 reservations	17			
Minnesota Chippewa White Earth Band	146			
Red Cliff Band of Lake Superior Chippewa Indians (WI)	11			
Saginaw Chippewa (MI)	4			
Sault Ste. Marie Tribe of Chippewa Indians (MI)	285			
Sokaogon Chippewa of Mole Lake Band (Chippewa) (WI)	3			
St. Croix Chippewa Indians (WI)	12			
Turtle Mountain Band of Chippewa Indians (ND)	2,089			
Total Chippewa Tribes	3,467	7.61	1.14	1
Gila River	1,094			
White Mountain Apache of Fort Apache	975			
Tohono O'odham Nation	924			
Mescalero Apache	549			
Total	3,542	7.78	1.17	1
Mississippi Band of Choctaw Indians (MS)	2,168			
Eastern Band of Cherokee Indians (NC)	1,040			
Total	3,208	7.04	1.06	1
Total Other Tribes	12,492	27.43	4.11	4
Total 2013-2014 Student Count	45,537			
Federal Government—Committee Membership	Designated Federal Officer			1
	Office of the Solicitor			1
	Bureau of Indian Education			1
	Department of Education			1
Total Tribal Committee Members				15
Total Federal Committee Members				4
TOTAL AYP Negotiated Rulemaking Committee				19

Each nomination is expected to include a nomination for a representative and an alternate who can fulfill the obligations of membership should the representative be unable to attend. The Committee membership should also reflect the diversity of tribal interests, and tribes should nominate representatives and alternates who will:

- Have knowledge of school assessments and accountability systems;
- Have relevant experience as past or present superintendents, principals, teachers, or school board members, or possess direct experience with AYP;
- Be able to coordinate, to the extent possible, with other tribes and schools who may not be represented on the Committee;
- Be able to represent the tribe(s) with the authority to embody tribal views, communicate with tribal constituents, and have a clear means to reach agreement on behalf of the tribe(s);
- Be able to negotiate effectively on behalf of the tribe(s) represented;
- Be able to commit the time and effort required to attend and prepare for meetings; and
- Be able to collaborate among diverse parties in a consensus-seeking process.

VI. Submitting Nominations

This notice was previously published in the **Federal Register** on January 31, 2013. The evaluation of nominations received as a result of the previous notice were conducted and validated for one year, expiring January 31, 2014. Representatives who were previously nominated would need to be re-nominated in response to this notice. The Secretary will only consider nominees nominated through the process identified in this Federal Register notice. Nominations received in any other manner will not be considered. Nominations must include the following information about each nominee:

(1) A letter from the Tribe supporting the nomination of the individual to serve as a tribal representative for the Committee;

(2) A resume reflecting the nominee's qualifications and experience in Indian education; resume to include the nominee's name, tribal affiliation, job title, major job duties, employer, business address, business telephone and fax numbers (and business email address, if applicable);

(3) The tribal interest(s) to be represented by the nominee (see Section IV, Part F of this notice of intent) and whether the nominee will represent other interest(s) related to this rulemaking, as the tribe may designate; and

(4) A brief description of how the nominee will represent tribal views,

communicate with tribal constituents, and have a clear means to reach agreement on behalf of the tribe(s) they are representing.

Additionally, a statement on whether the nominee is only representing one tribe's views or whether the expectation is that the nominee represents a specific group of tribes.

To be considered, nominations must be received by the close of business on the date listed in the **DATES** section, at the location indicated in the **ADDRESSES** section.

Certification

For the above reasons, I hereby certify that the Adequate Yearly Progress Negotiated Rulemaking Committee is in the public interest.

Dated: October 29, 2015.

Kevin K. Washburn,

Assistant Secretary—Indian Affairs.

[FR Doc. 2015–28379 Filed 11–6–15; 8:45 am]

BILLING CODE 4337–15–P

DEPARTMENT OF DEFENSE

Office of the Secretary

32 CFR Part 208

[Docket ID: DOD–2013–OS–0021]

RIN 0790–AJ01

National Security Education Program (NSEP) and NSEP Service Agreement

AGENCY: Under Secretary of Defense for Personnel and Readiness, DoD.

ACTION: Proposed rule

SUMMARY: This proposed rule implements the responsibilities of the Secretary of Defense for administering NSEP and explains the responsibilities of the Under Secretary of Defense for Personnel and Readiness (USD (P&R)) for policy and funding oversight for NSEP. It discusses requirements for administering and executing the National Security Education Program (NSEP) service agreement and; and assigns oversight of NSEP to the Defense Language and National Security Education Office (DLNSEO).

DATES: Comments must be received by January 8, 2016.

ADDRESSES: You may submit comments, identified by docket number and/or RIN number and title, by any of the following methods:

- *Federal Rulemaking Portal: http://www.regulations.gov*. Follow the instructions for submitting comments.
- *Mail:* Department of Defense, Office of the Deputy Chief Management Officer, Directorate of Oversight and Compliance, Regulatory and Audit Matters Office, 9010 Defense Pentagon, Washington, DC 20301–9010.

Instructions: All submissions received must include the agency name and docket number or Regulatory Information Number (RIN) for this **Federal Register** document. The general policy for comments and other submissions from members of the public is to make these submissions available for public viewing on the Internet at *http://www.regulations.gov* as they are received without change, including any personal identifiers or contact information.

FOR FURTHER INFORMATION CONTACT: Alison Patz, 571–256–0771.

SUPPLEMENTARY INFORMATION:

Background

The David L. Boren National Security Education Act of 1991 (Pub. L. 102–183), as amended, codified at 50 U.S.C. 1901 *et seq.* (NSEA), mandated that the Secretary of Defense create and sustain a program to award scholarships to U.S. undergraduate students, fellowships to U.S. graduate students, and grants to U.S. institutions of higher education.

The NSEP is authorized through 50 U.S.C. 1901–1912 to award scholarships, fellowships, and grants to institutions of higher education in order to increase the quantity, diversity, and quality of the teaching and learning of subjects in the fields of foreign languages, area studies, counterproliferation studies, and other international fields that are critical to the Nation's interest, as well as to produce an increased pool of applicants for working the departments and agencies of the United States Government with national security responsibilities.

NSEP oversees nine national security language and culture initiatives designed to attract, recruit, and train a future federal workforce skilled in languages and cultures to work across all agencies involved in national security. These initiatives support professional proficiency language training at U.S. colleges and universities, as well as support students to study overseas in regions critical to U.S. national security through scholarships and fellowships.

The proposed rule outlines requirements applicable to the NSEP office and NSEP award recipients. This includes information about the NSEP service agreement, which award recipients must adhere to as a condition of award. In exchange for support, NSEP awardees must work in qualifying national security positions in the U.S. federal government for at least one year.

Benefits

NSEP, as outlined in the David L. Boren National Security Education Act of 1991 (NSEA), oversees multiple critical initiatives. All of NSEP's programs are designed to complement one another, ensuring that the lessons learned in one program inform the approaches of the others. Congress specifically—and uniquely—structured NSEP to focus on the combined issues of language proficiency, national security, and the needs of the federal workforce.

NSEA outlines five major purposes for NSEP, namely:

- To provide the necessary resources, accountability, and flexibility to meet the national security education needs of the United States, especially as such needs change over time;
- To increase the quantity, diversity, and quality of the teaching and learning of subjects in the fields of foreign languages, area studies, counterproliferation studies, and other international fields that are critical to the nation's interest;
- To produce an increased pool of applicants to work in the departments and agencies of the United States government with national security responsibilities;
- To expand, in conjunction with other federal programs, the international experience, knowledge base, and perspectives on which the United States citizenry, government employees, and leaders rely; and
- To permit the federal government to advocate on behalf of international education.

As a result, NSEP is the only federally-funded effort focused on the combined issues of language proficiency, national security, and the needs of the federal workforce.

- Boren Scholarships are awarded to U.S. undergraduates for up to one academic year of overseas study of languages and cultures critical to national security. Boren Scholars demonstrate their merit for an award in part by agreeing to fulfill a one year (minimum) service commitment to the U.S. government. NSEP awards approximately 150 Boren Scholarships annually.
- Boren Fellowships are awarded for up to two years to U.S. graduate students who develop independent projects that combine study of language and culture in areas critical to national security. Boren Fellows demonstrate their merit for an award in part by agreeing to fulfill a one year (minimum)

service commitment to the U.S. government. NSEP awards approximately 100 Boren Fellowships annually.

- The Language Flagship supports students to achieve superior-level proficiency in critical languages including Arabic, Chinese, Hindi Urdu, Korean, Persian, Portuguese, Russian, Swahili, and Turkish. Flagship students combine language study with a major discipline of their choice and complete a year-long overseas program that includes intensive language study, direct enrollment in a local university, and a professional internship experience. In addition, The Language Flagship awards grants to U.S. universities recognized as leaders in the field of language education and supports new concepts in language education. More than 2,000 U.S. undergraduate students participate annually in The Language Flagship's programs, which are based at more than 20 U.S. institutions of higher education and multiple universities overseas.
- The Language Flagship also manages a Flagship/ROTC initiative, through which ROTC cadets and midshipmen are supported at Flagship institutions, thus building a cadre of students with professional-level proficiency and commitment to serve in the U.S. armed forces.
- The English for Heritage Language Speakers (EHLS) program provides professional English language instruction for U.S. citizens who are native speakers of critical languages. Participants receive scholarships to the EHLS program at Georgetown University, which provides eight months of instruction. This training allows participants to achieve professional-level proficiency in the English language and prepares them for key federal job opportunities. NSEP awards approximately 20 EHLS Scholarships annually.
- The African Flagship Languages Initiative (AFLI) is a Flagship language program, designed in cooperation with Boren Scholarships and Fellowships, to improve proficiency outcomes in a number of targeted African languages. The Intelligence Authorization Act for Fiscal Year 2010, Section 314 (Pub. L. 111–254) initially directed the establishment of a pilot program to build language capabilities in areas critical to U.S. national security interests, but where insufficient instructional infrastructure currently exists domestically. Based on the successes of its many critical language initiatives, NSEP was designated to spearhead the effort. All AFLI award recipients are funded through either a Boren Scholarship or Boren Fellowship. Participants complete eight weeks of domestic language study at the University of Florida prior to departure overseas, followed by intensive, semester-long study internationally. AFLI's current language offerings include Akan/Twi, French (for Senegal), Hausa, Portuguese (for Mozambique), Swahili, Wolof, and Zulu.
- The National Language Service Corps (NLSC) is a civilian corps of volunteers with certified proficiency in foreign languages. Its purpose is to support DoD or other U.S. departments or agencies in need of foreign language services, including surge or emergency requirements. NLSC capabilities include language support for interpretation, translation, analysis, training, logistics activities, and emergency relief activities. Members generally possess professional-level proficiency in a foreign language and in English, and may have clearances or may be clearable.
- Project GO provides grants to U.S. institutions of higher education with large ROTC student enrollments, including the Senior Military Colleges. In turn, these institutions provide language and culture training to ROTC students from across the nation, funding domestic and overseas ROTC language programs and scholarships. To accomplish Project GO's mission, NSEP closely works with Army, Air Force, and Navy ROTC Headquarters, as well as with U.S. institutions of higher education. To date, institutions participating in the program have supported critical language study for over 3,000 ROTC students nationwide. More than 20 domestic institutions host Project GO programs serving ROTC students from across the country.
- Language Training Centers (LTC) are a collaborative initiative to develop expertise in critical languages, cultures and strategic regions for DoD personnel. Section 529(e) of the National Defense Authorization Act for Fiscal Year 2010 authorized the establishment of the program in 2011. The program's purpose is to leverage the expertise and infrastructure of higher education institutions to train DoD personnel in language, culture, and regional area studies. In 2010, NSEP funded the study "Leveraging Language and Cultural Education and U.S. Higher Education" to fulfill a Congressional request. Findings from the Leveraging report revealed that federal investments in language and culture at higher education institutions produced a group of universities with well-established programs and faculty expertise that are capable of supporting the military's needs for proficiency-based training in critical and less commonly taught languages at various levels of acquisition. Therefore, facilitating the establishment and continued growth of relationships among these institutions, military installations, and DoD entities is an integral part of the LTC program.

Costs

To manage and run its initiatives, NSEP employs 8.78 full-time equivalents (FTE), ranging in salary from Federal General Schedule (GS) grade 6 through GS grade 15 (three employees devote partial time to NSEP initiatives, which equates to 0.78 FTE). Using the 2014 GS pay scale for the Washington, DC metro area, NSEP's 8.78 FTEs equate to approximately $795,154 in DoD expenditure annually. To calculate this figure, NSEP used GS step one wage rates for all employees.

NSEA legislates $14,000,000 for Boren Scholarships, Boren Fellowships, and The Language Flagship programs annually (sec. 1910–1911) and $2,000,000 for the EHLS program annually (sec. 1912). In addition, the Intelligence Authorization Act for Fiscal Year 2010, Section 314 (Pub. L. 111–259) directed the establishment of an African language program, a hybrid of Boren and Flagship, at $2,000,000. In addition to these amounts, NSEP receives $10,000,000 annually from DoD appropriations in support of Flagship program efforts.

Retrospective Review

This proposed rule is part of DoD's retrospective plan, completed in August 2011, under Executive Order 13563, "Improving Regulation and Regulatory Review.® DoD's full plan and updates can be accessed at: *http://www.regulations.gov/#!docketDetail;dct=FR+PR+N+O+SR;rpp=10;po=0;D=DOD-2011-OS-0036*.

Executive Order 12866, "Regulatory Planning and Review" and Executive Order 13563, "Improving Regulation and Regulatory Review"

Executive Orders 13563 and 12866 direct agencies to assess all costs and benefits of available regulatory alternatives and, if regulation is necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health and safety effects, distribute impacts, and equity). Executive Order 13563 emphasizes the importance of quantifying both costs and benefits, of reducing costs, of harmonizing rules, and of promoting flexibility. This rule has been designated a ''significant regulatory action,'' although not economically significant, under section 3(f) of Executive Order 12866. Accordingly, this proposed rule has been reviewed by the Office of Management and Budget (OMB).

Sec. 202, Pub. L. 104–4, ''Unfunded Mandates Reform Act''

Section 202 of the Unfunded Mandates Reform Act of 1995 (UMRA) (Pub. L. 104–4) requires agencies assess anticipated costs and benefits before issuing any rule whose mandates require spending in any 1 year of $100 million in 1995 dollars, updated annually for inflation. In 2014, that threshold is approximately $141 million. This document will not mandate any requirements for State, local, or tribal governments, nor will it affect private sector costs.

Public Law 96–354, ''Regulatory Flexibility Act'' (5 U.S.C. 601)

The Department of Defense certifies that this proposed rule is not subject to the Regulatory Flexibility Act (5 U.S.C. 601) because it would not, if promulgated, have a significant economic impact on a substantial number of small entities. Therefore, the Regulatory Flexibility Act, as amended, does not require us to prepare a regulatory flexibility analysis.

Public Law 96–511, ''Paperwork Reduction Act'' (44 U.S.C. Chapter 35)

It has been certified that 32 CFR part 208 does impose reporting or recordkeeping requirements under the Paperwork Reduction Act of 1995. These requirements have been approved by OMB and assigned OMB Control Number 0704-0368, National Security Education Program (Service Agreement Report for Scholarship and Fellowship Awards).

Executive Order 13132, ''Federalism''

Executive Order 13132 establishes certain requirements that an agency must meet when it promulgates a proposed rule (and subsequent final rule) that imposes substantial direct requirement costs on State and local governments, preempts State law, or otherwise has Federalism implications. This proposed rule will not have a substantial effect on State and local governments.

List of Subjects in 32 CFR Part 208

Education, Languages, Service agreement.

Accordingly 32 CFR part 208 is proposed to be added to read as follows:

PART 208—NATIONAL SECURITY EDUCATION PROGRAM (NSEP) AND NSEP SERVICE AGREEMENT

Sec.

Authority: 50 U.S.C. 1901-1912, 50 U.S.C. 1903, 50 U.S.C. chapter 37.

§ 208.1 Purpose.

This part:

(a) Implements the responsibilities of the Secretary of Defense for administering NSEP.

(b) Updates DoD policy, assigns responsibilities, and prescribes procedures and requirements for administering and executing the NSEP service agreement in accordance with 50 U.S.C. chapter 37.

(c) Modifies requirements related to the NSEP service agreement.

(d) Assigns oversight of NSEP to the Defense Language and National Security Education Office.

§ 208.2 Applicability.

This part applies to:

(a) The Office of the Secretary of Defense, the Military Departments, the Chairman of the Joint Chiefs of Staff and the Joint Staff, the Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities in the DoD (referred to collectively in this part as the ''DoD Components'').

(b) The Administrative Agent. If the Administrative Agent is an entity outside of DoD pursuant to a DoD contract, grant, or cooperative agreement, then DoD personnel shall ensure that the relevant contract, grant or cooperative agreement aligns with the policies and procedures set forth in this part.

(c) All recipients of awards by NSEP.

§ 208.3 Definitions.

These terms and their definitions are for the purpose of this part.

Administrative agent. Organization that will administer and monitor resources for NSEP.

Boren Fellowship. A competitive award granted for graduate study under NSEP.

Boren Scholarship. A competitive award granted for undergraduate study abroad under NSEP.

Critical area. Determined by the Secretary of Defense, in consultation with the members of the National Security Education Board, in accordance with 50 U.S.C. chapter 37 and 50 U.S.C. 1903.

Critical foreign language. Determined by the Secretary of Defense, in consultation with the members of the National Security Education Board in accordance with 50 U.S.C. chapter 37.

Deferral of the NSEP service agreement. Official NSEP documentation signed by the Assistant Secretary of Defense for Readiness and Force Management (ASD(R&FM)), through the Deputy Assistant Secretary of Defense for Readiness (DASD(R)), by which an NSEP award recipient pursuing approved, qualified further education is allowed to postpone meeting the service deadline.

(1) A deferral reschedules the date by which an NSEP award recipient must begin to fulfill service.

(2) Qualified further education includes, but is not limited to, no less than half-time enrollment in any degree-granting, accredited institution of higher education worldwide or participation in an academic fellowship program (*e.g.*, Fulbright Fellowship, Thomas R. Pickering Foreign Affairs Fellowship).

(3) A deferral is calculated by first calculating the length of enrollment in the degree program from start date to anticipated graduation date, and then adding the length of enrollment in the degree program to the service deadline.

(4) Approvals of deferrals will be considered on a case-by-case basis.

Extension of the NSEP service agreement. Official NSEP documentation signed by the ASD(R&FM), through the DASD(R), by which an NSEP award recipient who has completed award requirements, reached the service deadline, and is actively seeking to fulfill the NSEP service agreement in a well-documented manner is allowed to extend the service deadline. An extension reschedules the date by which an NSEP award recipient must complete the service required in the NSEP service agreement.

Intelligence Community. Any element of the Intelligence Community as defined in Section 3 of the National Security Act of 1947, as revised, [50 U.S.C. 3003].

Language proficiency. The U.S. Government relies on the Interagency Language Roundtable (ILR) scale to determine language proficiency. According to the ILR scale:

(1) 0 is No Proficiency.

(2) 0+ is Memorized Proficiency.

(3) 1 is Elementary Proficiency.

(4) 1+ is Elementary Proficiency, Plus.

(5) 2 is Limited Working Proficiency.

(6) 2+ is Limited Working Proficiency, Plus.

(7) 3 is General Professional Proficiency.

(8) 3+ is General Professional Proficiency, Plus.

(9) 4 is Advanced Professional Proficiency.

(10) 4+ is Advanced Professional Proficiency, Plus.

(11) 5 is Functional Native Proficiency.

NSEP Service Approval Committee. Committee of key NSEP staff members who review the merits of all requests for service credit, deferrals, extensions, or waivers of the NSEP service agreement, including adjudication of all cases involving award recipients who decline job offers, in order to provide recommendations to the ASD(R&FM), through the DASD(R).

Other federal agencies. Includes any federal government agency, department, bureau, office or any other federal government organization of any nature other than the Department of Defense or any component, agency, department, field activity or any other subcomponent of any kind within or subordinate to the Department of Defense.

Program end date. Official end of an NSEP award recipient's program, as set forth within the individual's NSEP service agreement.

Reserve Officer Training Corps (ROTC). College program offered at colleges and universities across the United States that prepares young adults to become officers in the U.S. Military. In exchange for a paid college education and a guaranteed post-college career, cadets commit to serve in the Military after graduation. Each Service branch administers its own ROTC program.

Request of service credit in fulfillment of the NSEP service agreement. Written request made through submission of a DD Form 2753 to the NSEP office, documenting how employment an NSEP award recipient held or holds complies with fulfillment of the NSEP service agreement.

Satisfactory academic progress. Maintenance of academic standards at both home and host institution(s) for every NSEP award recipient for the duration of the study program and as defined in each NSEP service agreement.

Service deadline. Date by which NSEP award recipient must begin to fulfill the NSEP service agreement.

Waiver of the NSEP service agreement. Official NSEP documentation, signed by the ASD(R&FM), through the DASD(R), by which an NSEP award recipient is relieved of responsibilities associated with the NSEP service agreement.

Work in fulfillment of the NSEP service agreement. Upon completion of the NSEP award recipient's study program, such individual must seek employment in the DoD, Department of Homeland Security (DHS), Department of State (DOS), or the Intelligence Community, or if no suitable position is available, anywhere in the U.S. Government in a position with national security responsibilities. If such individual is unsuccessful in finding a federal position after making a good faith effort to do so, award recipient agrees to seek employment in the field of education in a position related to the study supported by such scholarship or fellowship. The award recipient further agrees to fulfill the service requirement.

§ 208.4 Policy.

It is DoD policy that:

(a) NSEP assist in making available to DoD and other federal entities, as applicable, personnel possessing proficiency in languages and foreign regional expertise critical to national security by providing scholarships and fellowships pursuant to 50 U.S.C. 1902(a). These scholarships and fellowships will be awarded to:

(1) Students who are U.S. citizens, to pursue qualifying undergraduate and graduate study in domestic and foreign education systems to assist in meeting national security needs for professionals with in-depth knowledge of world languages and cultures, and who enter into an NSEP service agreement as required by 50 U.S.C. 1902(b); or

(2) Students who are U.S. citizens who are native speakers of a foreign language identified as critical to the national security of the United States, but who are not proficient at a professional level in the English language with respect to reading, writing, and other skills, to enable such students to pursue English language studies at institutions of higher education. Recipients must agree to enter into an NSEP service agreement as required by 50 U.S.C. 1902(b).

(b) Grants will be awarded to institutions of higher education for programs in critical areas pursuant to 50 U.S.C. 1902(a) and 1902(f) to implement a national system of programs to produce advanced language expertise critical to the national security of the United States.

(c) An NSEP award recipient must enter into an NSEP service agreement before receipt of an award as required by 50 U.S.C. chapter 37. The award recipient must agree to maintain satisfactory academic progress and work in fulfillment of the NSEP service agreement until all service requirements are satisfied.

(d) All NSEP award recipients who are government employees or members of the uniformed services at the time of award must confirm that they have resigned or been separated from such employment or service before receiving support for their NSEP-funded overseas study. These stipulations apply to all individuals, including employees of a department, agency, or entity of the U.S. Government and members of the uniformed services, including members of a Reserve Component of the uniformed services. ROTC participants who are also members of a Reserve Component must be in an inactive, non-drilling status during the course of their NSEP-funded overseas study.

(e) Neither DoD nor the U.S. Government is obligated to provide, or offer employment to, award recipients as a result of participation in the program. All federal agencies are encouraged to assist in placing NSEP award recipients upon successful completion of the program.

§ 208.5 Responsibilities.

(a) Under the authority, direction, and control of the Under Secretary of Defense for Personnel and Readiness (USD(P&R)), the ASD(R&FM):

(1) Develops programs, processes, and policies to support NSEP award recipients in fulfilling their NSEP service agreement through internships or employment in federal security agencies pursuant to 50 U.S.C. chapter 37.

(2) Determines, pursuant to 50 U.S.C. 1902(a), after consultation with the National Security Education Board, which countries, languages, and disciplines are critical and in which there are deficiencies of knowledgeable personnel within federal entities.

(b) Under the authority, direction, and control of the ASD(R&FM), the DASD(R):

(1) Makes available competitive scholarship, fellowship, and English for Heritage Language Speakers (EHLS) awards to U.S. citizens who wish to engage in study for the purposes of national security in accordance with 50 U.S.C. chapter 37.

(2) Manages, oversees, and monitors compliance of NSEP service agreements.

(3) Advises NSEP award recipients on how to fulfill their NSEP service agreement in national security positions.

(4) Maintains documentation of successful completion of federal service or initiates debt collection procedures for those NSEP recipients who fail to

comply with the NSEP service agreement.

(5) Works with agencies or offices in the U.S. Government to identify potential employment opportunities for NSEP award recipients and make employment opportunities and information readily available to all award recipients.

(6) Approves or disapproves, as appropriate, all DD Form 2573 written requests for service credit, deferrals, extensions, or waivers of the NSEP service agreement, including adjudication of all cases involving award recipients who decline job offers.

(c) Under the authority, direction, and control of the USD(P&R), in consultation with the DASD(R), and in accordance with DoD Directive 5100.87, ''DoD Human Resources Activity'' (available at *http://www.dtic.mil/whs/directives/corres/pdf/510087p.pdf*), the Director, provides:

(1) Program and budget management and other administrative, facility, operational, and logistical support for NSEP.

(2) Fiscal management and oversight to ensure all funds provided for NSEP are separately and visibly accounted for in the DoD budget.

§ 208.6 Procedures.

(a) *NSEP award recipients.* The award recipient of any scholarship or fellowship award through NSEP will:

(1) Maintain satisfactory academic progress in the course of study for which assistance is provided, according to the regularly prescribed standards and practices of the institution in which the award recipient is matriculating.

(2) As a condition of receiving an award, sign an NSEP service agreement as required by 50 U.S.C. chapter 37, which, among other requirements, must acknowledge an understanding and agreement by the award recipient that failure to maintain satisfactory academic progress constitutes grounds upon which the award may be terminated and trigger the mandatory requirement to return to the U.S. Treasury the scholarship, fellowship, or EHLS funds provided to the award recipient.

(3) Notify the Administrative Agent within ten business days if advised of failure to maintain academic progress by the institution of matriculation.

(4) Notify the ASD(R&FM), through the DASD(R), in a timely manner and in advance of the service deadline should any request for deferral, extension, or waiver become necessary.

(i) *Deferrals.* NSEP award recipients actively seeking to fulfill the NSEP service agreement in a well-documented manner may request approval of a one year extension of their service deadline. Approvals of deferrals for pursuit of education will be considered on a case-by-case basis. Renewal of a deferral may be granted if adequately justified.

(ii) *Extensions.* A thorough outline describing all further plans to complete the NSEP service agreement must accompany all extension requests. No more than two extensions may be granted to an NSEP award recipient.

(iii) *Waivers.* (A) In extraordinary circumstances, an NSEP award recipient may be relieved of responsibilities associated with the NSEP service agreement. As a result of receiving a waiver, the award recipient will no longer receive job search assistance from NSEP; is no longer a beneficiary of the special hiring advantages available to award recipients who have a service requirement; and will not be eligible to receive NSEP letters of certification, or endorsements or recommendations. Upon request, the NSEP office will continue to certify that the award recipient received an NSEP scholarship or fellowship.

(B) The DASD(R), will consider requests for extensions and waivers of the NSEP service agreement only under special circumstances as defined in §208.6(b) of this part. The request must set forth the basis, situation, and causes which support the requested action, including evidence to support the request. The award recipient must submit requests electronically on *www.nsepnet.org* or to *nsep@nsep.gov*. Final approval of work in fulfillment of the NSEP service agreement, deferrals, extensions, and waivers rest with, and is at the discretion of, the DASD(R).

(5) Immediately upon successful completion of the award program and either completion of the degree for which the award recipient is matriculated or withdrawal from such degree program, begin the federal job search. Award recipients should concurrently seek positions within DoD, any element of the Intelligence Community, as defined in section 3 of the National Security Act of 1947, as revised, [50 U.S.C. 3003(4)(L)], the DHS, or DOS.

(6) Work to satisfy all service requirements in accordance with applicable NSEP service agreements until all NSEP service requirements are satisfied. Work in fulfillment of the NSEP service agreement must be wholly completed within five years of the award recipient's first date of service unless an approved deferral or extension has been granted.

(7) Work for the total period of time specified in the NSEP service agreement either consecutively in one organization, or through follow-on employment in two or more organizations.

(8) Repay the U.S. Treasury the award funds provided to the award recipient if the requirements of the NSEP service agreement are not met.

(9) Submit DD Form 2753 to NSEP no later than one month after termination of the period of study funded by NSEP and annual reports thereafter until the NSEP service requirement is satisfied. The DD Form 2753 will include:

(i) Any requests for deferrals, extensions, or waivers with adequate evidence and support for such requests.

(ii) The award recipient's current status (*e.g.*, not yet graduated from, or terminated enrollment in, the degree program pursued while receiving NSEP support; engaged in work in fulfillment of the requirement.)

(iii) Updated contact information.

(10) Notify the ASD(R&FM), through the DASD(R), within ten business days of any changes to the award recipient's mailing address.

(b) *Procedures and Requirements Applicable to NSEP Award Recipients*—(1) *NSEP Service Agreement.* Award recipients of any scholarship, fellowship, or EHLS award through this program must comply with the terms of the NSEP service agreement they signed. NSEP awards entered into before the date of this part will be governed by the laws, regulations, and policies in effect at the time that the award was made. The NSEP service agreement for recipients awarded as of the date of this part will:

(i) In accordance with 50 U.S.C. 1902(b) outline requirements for NSEP award recipients to fulfill their federal service requirement through work in positions that contribute to the national security of the United States. An emphasis is placed on work within one of four entities: DoD, DHS, DOS, or any element of the Intelligence Community. On a case-by-case basis, NSEP may consider employment with a federal contractor of one of these four priority entities as meeting the service requirement should the award recipient provide adequate documentary evidence that the salary for the position is funded by the U.S. Government.

(ii) Stipulate that absent the availability of a suitable position in the four priority entities or a contractor thereof, award recipients may satisfy the service requirement by serving in any federal agency or office in a position with national security responsibilities. It will also stipulate that absent the availability of a suitable position in DoD, any element of the Intelligence Community, DHS, DOS, a contractor thereof, or any federal agency with national security responsibilities, award recipients may satisfy the service requirement by working in the field of education in a discipline related to the study supported by the program if the recipient satisfactorily demonstrates to the Secretary of Defense through the DASD(R), that no position is available in the departments, agencies, and offices covered by paragraph (b)(1)(i) of this section.

(2) *Implementation*. The NSEP service agreement will be implemented as follows:

(i) Prior to receiving assistance, the award recipient must sign an NSEP service agreement. The award recipient will submit to the NSEP Administrative Agent, in advance of program of study start date, any proposed changes to the approved award program (*i.e.*, course and schedule changes, withdrawals, course or program incompletions, unanticipated or increased costs).

(ii) The minimum length of service requirement for undergraduate scholarship, graduate fellowship, and EHLS award recipients is one year. The duration of the service requirement for graduate fellowship award recipients is equal to the duration of assistance provided by NSEP.

(iii) In accordance with 50 U.S.C. 1902(b), undergraduate scholarship students must begin fulfilling the NSEP service agreement within three years of completion or termination of their undergraduate degree program.

(iv) In accordance with 50 U.S.C. 1902(b), graduate fellowship students must begin fulfilling the NSEP service agreement within two years of completion or termination of their graduate degree program.

(v) In accordance with 50 U.S.C. 1902(b), EHLS award recipients must begin fulfilling the service requirement within three years of completion of their program.

(vi) The award recipient must accept a reasonable offer of employment, as defined by the ASD(R&FM), through the DASD(R), in accordance with the NSEP service agreement, at a salary deemed by the hiring organization as commensurate with the award recipient's education level, and consistent with the terms and conditions of the NSEP service agreement.

(vii) The receipt of a completed DD Form 2753 will be acknowledged through official correspondence from NSEP to the award recipient. Award recipients who do not submit the DD Form 2753 as required will be notified by NSEP of the intent to pursue collection action.

(viii) If the award recipient fails to maintain satisfactory academic progress for any term in which assistance is provided, probationary measures of the host institution will apply to the award recipient. Failure to meet the institution's requirements to resume satisfactory academic progress within the prescribed guidelines of the institution will result in the termination of assistance to the award recipient.

(ix) Extenuating circumstances, such as illness of the award recipient or a close relative, death of a close relative, or an interruption of study caused by the host institution, may be considered acceptable reasons for non-satisfactory academic progress. The award recipient must notify the NSEP Administrative Agent of any extenuating circumstances within ten business days of occurrence. The NSEP Administrative Agent will review these requests to determine what course of action is appropriate and make a recommendation to NSEP for final determination. The DASD(R), will upon receipt of the NSEP Administrative Agent recommendation, determine by what conditions to terminate or reinstate the award to the award recipient.

(x) NSEP award recipients may apply to the DASD(R), for a deferral of the NSEP service agreement requirement if pursuing qualified further education.

(xi) NSEP award recipients may apply to the DASD(R), to receive an extension of the NSEP service agreement requirement if actively seeking to fulfill the NSEP service agreement in a well-documented manner.

(xii) In extraordinary circumstances an NSEP award recipient may request a waiver to be relieved of responsibilities associated with the NSEP service agreement. Conditions for requesting a waiver to the NSEP service agreement may include:

(A) Situations in which compliance is either impossible or would involve extreme hardship to the award recipient.

(B) Interruptions in service due to temporary physical or medical disability or other causes beyond the award recipient's control.

(C) Unreasonable delays in the hiring process not caused by the award recipient, including delays in obtaining a security clearance if required for employment.

(D) Hiring freezes that adversely affect award recipients who are seeking positions with the U.S. Government.

(E) Permanent physical or medical disability that prevent the award recipient from fulfilling the obligation.

(F) Inability to complete the NSEP service agreement due to terminations or interruptions of work beyond the award recipient's control.

(G) Death of the award recipient.

(xiii) In cases where assistance to the award recipient is terminated, the amount owed to the U.S. Government is equal to the support received from NSEP. Repayment to the U.S. Treasury must be made within a period not to exceed six months from expiration of the service deadline. Noncompliance with repayment requirements will result in the initiation of standard U.S. Government collection procedures to obtain payment for overdue indebtedness, unless a waiver is specifically granted by the ASD(R&FM), through the DASD(R). Further job search assistance to an award recipient will be denied if any outstanding debt remains unpaid as a result of an award termination.

(A) Repayment to the U.S. Treasury for the amount of assistance provided becomes due, either in whole or in part, if the award recipient fails to fulfill the NSEP service agreement. Award recipients who do not submit the DD Form 2753 as required will be notified by NSEP of the intent to pursue collection action. Noncompliance with repayment requirements will result in the initiation of standard U.S. Government collection procedures to obtain payment for overdue indebtedness, unless a waiver is specifically granted by the DASD(R).

(B) Repayment recovery procedures will include one or a combination of the following:

(*1*) Voluntary repayment schedule arranged between the award recipient and the Administrative Agent.

(*2*) Deduction from accrued pay, compensation, amount of retirement credit, or any other amount due the employee from the U.S. Government.

(*3*) Such other methods as are provided by law for recovery of amounts owed to the U.S. Government.

Dated: November 4, 2015.

Aaron Siegel,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

[FR Doc. 2015–28431 Filed 11–6–15; 8:45 am]

BILLING CODE P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA–R10–OAR–2015–0681; FRL–9936–01-Region 10]

Approval and Promulgation of Implementation Plans; Designation of Areas for Air Quality Planning Purposes; Idaho; Reclassification as Serious Nonattainment for the 2006 Fine Particulate Matter Standards

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA) is proposing to reclassify to Serious the Franklin County, Idaho portion of the multi-state Logan, Utah/Franklin county, Idaho nonattainment area (Logan UT/ID area) for the 2006 24-hour fine particulate matter ($PM_{2.5}$) National Ambient Air Quality Standards (NAAQS). Our proposal is based on the EPA's determination that the Logan, UT/ID area cannot practicably attain the 2006 $PM_{2.5}$ NAAQS by the applicable Moderate area attainment date of December 31, 2015. Should the EPA finalize reclassification of the area to Serious, Idaho will be required to submit an updated emissions inventory, Best Available Control Measures (BACM)/Best Available Control Technology (BACT), and revisions to its Nonattainment New Source Review (NNSR) program within 18 months. The attainment demonstration and the remaining Serious area nonattainment plan elements will be due no later than three years after the effective date of the final action or December 31, 2018, whichever is earlier. Upon reclassification as Serious, the Logan, UT/ID $PM_{2.5}$ nonattainment area will be required to attain the standard as expeditiously as practicable, but no later than December 31, 2019.

DATES: Comments must be received on or before December 9, 2015.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA–R10–OAR–2015–0681, by any of the following methods:

A. *www.regulations.gov:* Follow the on-line instructions for submitting comments.

B. Mail: Jeff Hunt, EPA Region 10, Office of Air, Waste and Toxics (AWT–150), 1200 Sixth Avenue, Suite 900, Seattle WA, 98101

C. Email: *R10-Public_Comments@epa.gov*

D. Hand Delivery: EPA Region 10 Mailroom, 9th Floor, 1200 Sixth Avenue, Suite 900, Seattle WA, 98101. Attention: Jeff Hunt, Office of Air, Waste and Toxics, AWT—150. Such deliveries are only accepted during normal hours of operation, and special arrangements should be made for deliveries of boxed information

Instructions: Direct your comments to Docket ID No. EPA–R10–OAR–2015–0681. The EPA's policy is that all comments received will be included in the public docket without change and may be made available online at *www.regulations.gov,* including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information the disclosure of which is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through *www.regulations.gov* or email. The *www.regulations.gov* Web site is an ''anonymous access'' system, which means the EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an email comment directly to the EPA without going through *www.regulations.gov* your email address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, the EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD–ROM you submit. If the EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, the EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses.

Docket: All documents in the electronic docket are listed in the *www.regulations.gov* index. Although listed in the index, some information is not publicly available, *i.e.,* CBI or other information the disclosure of which is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically in *www.regulations.gov* or in hard copy during normal business hours at the Office of Air, Waste and Toxics, EPA Region 10, 1200 Sixth Avenue, Seattle WA, 98101.

FOR FURTHER INFORMATION CONTACT: Jeff Hunt at (206) 553–0256, *hunt.jeff@epa.gov,* or by using the above EPA, Region 10 address.

SUPPLEMENTARY INFORMATION: Throughout this document wherever ''we'', ''us'' or ''our'' are used, it is intended to refer to the EPA.

I. Background

Under 40 CFR 51.1000, the EPA defines the $PM_{2.5}$ design value, the metric used for determining compliance with the 2006 24-hour $PM_{2.5}$ NAAQS, as the highest three-year average of annual 98th percentile concentrations calculated for any ambient air quality monitor in a nonattainment area. In the case of the multi-state Logan UT/ID area, the air quality monitor with the highest design value is the Logan, Utah monitor (Air Quality System ID number 490050004) with a 2012–2014 design value of 45 micrograms per cubic meter ($\mu g/m^3$). In a companion proposal for the Utah portion of the Logan UT/ID nonattainment area (docket number EPA–R08–OAR–2015–0342), EPA Region 8 shows that it is impracticable for the Logan UT/ID area to attain the 2006 24-hour NAAQS by the end of 2015. Under CAA section 188, any reclassification of a Moderate $PM_{2.5}$ nonattainment area to Serious applies to the entire nonattainment area, with no option for a partial reclassification based on political jurisdiction or state boundaries. Therefore, EPA Region 10 is proposing to reclassify the Franklin County, Idaho portion of the area to Serious at the same time that the EPA is proposing to reclassify the Logan, UT portion of the area to Serious.

The EPA Region 8 proposal also explains the conditions under which the EPA may grant a series of two one-year extensions of the Moderate area attainment date in accordance with CAA section 188(d). If Utah and Idaho request an extension of the Moderate area attainment date for the Logan, UT/ID area before the EPA finalizes this discretionary reclassification, the EPA may decide not to finalize this proposed reclassification. If the EPA then acts on the States' extension request, the EPA will do so through a separate notice-and-comment rulemaking. In this proposed reclassification, we are neither proposing nor requesting comment on a potential extension.

II. Proposed Action

Pursuant to CAA section 188(b)(1), the EPA is proposing to reclassify the Franklin County portion of the Logan, UT/ID area as a Serious nonattainment area for the 2006 $PM_{2.5}$ NAAQS based on the Agency's determination that the area cannot practicably attain by the Moderate area attainment date of December 31, 2015. Consistent with the EPA Region 8 companion proposal under docket number EPA–R08–OAR–2015–0342 for the Logan, Utah portion of the area, upon final reclassification as a Serious nonattainment area, Idaho will be required to submit, within 18 months after the effective date of reclassification, an updated emissions inventory, BACM/BACT for emissions sources in the area, and revisions to its NNSR program. The attainment demonstration and the remaining Serious area nonattainment plan elements will be due no later than three years after the effective date of the final action, or December 31, 2018, whichever is earlier. Upon reclassification as Serious, the Logan UT/ID area will be required to attain the standard as expeditiously as practicable, but no later than December 31, 2019.

III. Statutory and Executive Order Reviews

Under the Clean Air Act, the Administrator is required to approve a SIP submission that complies with the provisions of the Act and applicable Federal regulations. 42 U.S.C. 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, the EPA's role is to approve state choices, provided that they meet the criteria of the Clean Air Act. Accordingly, this action merely approves state law as meeting Federal requirements and does not impose additional requirements beyond those imposed by state law. For that reason, this action:

- is not a ''significant regulatory action'' subject to review by the Office of Management and Budget under Executive Orders 12866 (58 FR 51735, October 4, 1993) and 13563 (76 FR 3821, January 21, 2011);
- does not impose an information collection burden under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*);
- is certified as not having a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*);
- does not contain any unfunded mandate or significantly or uniquely affect small governments, as described in the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4);
- does not have Federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999);
- is not an economically significant regulatory action based on health or safety risks subject to Executive Order 13045 (62 FR 19885, April 23, 1997);
- is not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001);
- is not subject to the requirements of Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) because this action does not involve technical standards; and
- does not provide the EPA with the discretionary authority to address, as appropriate, disproportionate human health or environmental effects, using practicable and legally permissible methods, under Executive Order 12898 (59 FR 7629, February 16, 1994).

In addition, this rule does not have tribal implications as specified by Executive Order 13175 (65 FR 67249, November 9, 2000), because it will not impose substantial direct costs on tribal governments or preempt tribal law. The SIP is not approved to apply in Indian reservations in the state or any other area where the EPA or an Indian tribe has demonstrated that a tribe has jurisdiction.

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Carbon monoxide, Incorporation by reference, Intergovernmental relations, Lead, Nitrogen dioxide, Ozone, Particulate matter, Reporting and recordkeeping requirements, Sulfur oxides, Volatile organic compounds.

Authority: 42 U.S.C. 7401 *et seq.*

Dated: October 7, 2015.

Dennis J. McLerran,

Regional Administrator, Region 10.

[FR Doc. 2015–28358 Filed 11–6–15; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 81

[EPA–R08–OAR–2015–0342; FRL–9936–74-Region 8]

Approval and Promulgation of Implementation Plans; Designation of Areas for Air Quality Planning Purposes; Utah; Reclassification as Serious Nonattainment for the 2006 Fine Particulate Matter Standard

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA) is proposing to reclassify to Serious the Salt Lake City, Provo, and the Logan portion of the Logan, UT/ID nonattainment areas in Utah for the 2006 24-hour fine particulate matter ($PM_{2.5}$) National Ambient Air Quality Standard (NAAQS). Our proposal is based on EPA's determination that the areas cannot practicably attain this standard by the applicable Moderate area attainment date of December 31, 2015. Upon final reclassification as a Serious area, Utah will be required to submit a Serious area plan for each nonattainment area, including demonstrations that the individual plans for each area provides for attainment of the 2006 $PM_{2.5}$ NAAQS by the applicable Serious area attainment date.

DATES: Written comments must be received on or before December 9, 2015.

ADDRESSES: Submit your comments, identified by EPA–R08–OAR–2015–0342, by one of the following methods:

- *http://www.regulations.gov.* Follow the online instructions for submitting comments.
- *Email: ostigaard.crystal@epa.gov.*
- *Fax:* (303) 312–6064 (please alert the individual listed in the **FOR FURTHER INFORMATION CONTACT** if you are faxing comments).
- *Mail:* Director, Air Program, EPA, Region 8, Mailcode 8P–AR, 1595 Wynkoop Street, Denver, Colorado 80202–1129.
- *Hand Delivery:* Director, Air Program, EPA, Region 8, Mailcode 8P–AR, 1595 Wynkoop Street, Denver, Colorado 80202–1129. Such deliveries are only accepted Monday through Friday, 8:00 a.m. to 4:30 p.m., excluding federal holidays. Special arrangements should be made for deliveries of boxed information.

Instructions: Direct your comments to Docket ID No. EPA–R08–OAR–2015–0342. EPA's policy is that all comments received will be included in the public docket without change and may be made available online at *http://www.regulations.gov,* including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through *http://www.regulations.gov* or email. The *http://www.regulations.gov* Web site is an ''anonymous access'' system, which means EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an email comment directly to EPA, without going through *http://www.regulations.gov,* your email address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD–ROM you submit. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses. For additional instructions on submitting comments, go to Section I. General Information of the **SUPPLEMENTARY INFORMATION** section of this document.

Docket: All documents in the docket are listed in the *http://www.regulations.gov* index. Although listed in the index, some information is not publicly available, *e.g.,* CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy. Publicly-available docket materials are available either electronically in *http://www.regulations.gov* or in hard copy at the EPA Region 8, Office of Partnerships and Regulatory Assistance, Air Program, 1595 Wynkoop Street, Denver, Colorado, 80202–1129. EPA requests that you contact the individual listed in the **FOR FURTHER INFORMATION CONTACT** section to view the hard copy of the docket. You may view the hard copy of the docket Monday through Friday, 8 a.m. to 4 p.m., excluding federal holidays. An electronic copy of the State's SIP compilation is also available at *http://www.epa.gov/region8/air/sip.html.*

FOR FURTHER INFORMATION CONTACT:

Crystal Ostigaard, Air Program, EPA, Region 8, Mailcode 8P–AR, 1595 Wynkoop Street, Denver, Colorado 80202–1129, (303) 312–6602, *ostigaard.crystal@epa.gov.*

SUPPLEMENTARY INFORMATION:

I. General Information

a. *Submitting CBI.* Do not submit CBI to EPA through *http://www.regulations.gov* or email. Clearly mark the part or all of the information that you claim to be CBI. For CBI information in a disk or CD ROM that you mail to EPA, mark the outside of the disk or CD ROM as CBI and then identify electronically within the disk or CD ROM the specific information that is claimed as CBI. In addition to one complete version of the comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2.

b. *Tips for Preparing Your Comments.* When submitting comments, remember to:

i. Identify the rulemaking by docket number and other identifying information (subject heading, **Federal Register** date and page number).

ii. Follow directions—The agency may ask you to respond to specific questions or organize comments by referencing a Code of Federal Regulations (CFR) part or section number.

iii. Explain why you agree or disagree; suggest alternatives and substitute language for your requested changes.

iv. Describe any assumptions and provide any technical information and/or data that you used.

v. If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow for it to be reproduced.

vi. Provide specific examples to illustrate your concerns, and suggest alternatives.

vii. Explain your views as clearly as possible, avoiding the use of profanity or personal threats.

viii. Make sure to submit your comments by the comment period deadline identified.

II. Background

On October 17, 2006, EPA revised the 24-hour NAAQS for $PM_{2.5}$ to provide increased protection of public health by lowering its level from 65 micrograms per cubic meter (μg/m³) to 35 μg/m³ (40 CFR 50.13).[1] Epidemiological studies have shown statistically significant correlations between elevated $PM_{2.5}$ levels and premature mortality. Other important health effects associated with $PM_{2.5}$ exposure include aggravation of respiratory and cardiovascular disease (as indicated by increased hospital admissions, emergency room visits, absences from school or work, and restricted activity days), changes in lung function and increased respiratory symptoms. Individuals particularly sensitive to $PM_{2.5}$ exposure include older adults, people with heart and lung disease, and children (78 FR 3086 at 3088, January 15, 2013). $PM_{2.5}$ can be emitted directly into the atmosphere as a solid or liquid particle (''primary $PM_{2.5}$'' or ''direct $PM_{2.5}$'') or can be formed in the atmosphere as a result of various chemical reactions among precursor pollutants such as nitrogen oxides, sulfur oxides, volatile organic compounds, and ammonia (''secondary $PM_{2.5}$'').[2]

Following promulgation of the new or revised NAAQS, EPA is required by CAA section 107(d) to designate areas throughout the nation as attaining or not attaining the NAAQS. On November 13, 2009, EPA designated the Salt Lake City, Prove, and Logan, UT/ID areas as nonattainment for the 2006 $PM_{2.5}$ standard of 35 μg/m³ (74 FR 58688, November 13, 2009). This designation became effective on December 14, 2009 (40 CFR 81.345). The Salt Lake City, Provo, and Logan, UT/ID areas were designated unclassifiable/attainment for the 1997 and 2012 annual $PM_{2.5}$ standards. For a precise description of the geographic boundaries of the Salt Lake City, Provo, and Logan portion of the Logan, UT/ID $PM_{2.5}$ nonattainment areas, see 40 CFR 81.345. EPA originally designated these areas under CAA title I, part D, subpart 1, which required the State of Utah to submit an attainment plan for each area no later than three years from the date of their nonattainment designations. These plans needed to provide for the attainment of the $PM_{2.5}$ standard as expeditiously as practicable, but no later than five years from the date the areas were designated nonattainment.

Subsequently, on January 4, 2013, the U.S. Court of Appeals for the District of Columbia held that EPA should have implemented the 2006 $PM_{2.5}$ 24-hour standard based on both CAA title I, part D, subpart 1 and subpart 4. Under subpart 4, nonattainment areas are initially classified as Moderate, and Moderate area attainment plans must address the requirements of subpart 4 as well as subpart 1. Additionally, CAA subpart 4 sets a different state implementation plan (SIP) submittal due date and attainment year. For a Moderate area, the attainment SIP is due 18 months after designation and the attainment year is the end of the sixth calendar year after designation. On June 2, 2014 (79 FR 31566), EPA finalized the Identification of Nonattainment Classification and Deadlines for

[1] See 71 FR 61224 (October 17, 2006). EPA set the first NAAQS for $PM_{2.5}$ on July 18, 1997 (62 FR 36852), including annual standards of 15 μg/m³ based on a 3-year average of annual mean $PM_{2.5}$ concentrations and 24-hour (daily) standards of 65 μg/m³ based on a 3-year average of 98th percentile 24-hour concentrations (40 CFR 50.7). In 2012, EPA revised the annual standard to lower its level to 12 μg/m³ (78 FR 3086, January 15, 2013, codified at 40 CFR 50.18). Unless otherwise noted, all references to the $PM_{2.5}$ standard in this notice are to the 2006 24-hour standard of 35 μg/m³ codified at 40 CFR 50.13.

[2] *See* EPA, Regulatory Impact Analysis for the Final Revisions to the National Ambient Air Quality Standards for Particulate Matter (EPA–452/R–12–005, December 2012), p. 2–1.

Submission of State Implementation Plan (SIP) Provisions for the 1997 Fine Particulate ($PM_{2.5}$) National Ambient Air Quality Standard (NAAQS) and 2006 $PM_{2.5}$ NAAQS (''the Classification and Deadline Rule''). This rule classified as Moderate the areas that were designated in 2009 as nonattainment, and set the attainment SIP submittal due date for those areas at December 31, 2014. That rule did not affect the Moderate area attainment date of December 31, 2015.

On March 23, 2015, EPA proposed the Fine Particulate Matter National Ambient Air Quality Standards: State Implementation Plan Requirements (''$PM_{2.5}$ Implementation Rule''), 80 FR 15340, which partially addresses the January 4, 2013 court ruling. This proposed rule details how air agencies should meet the statutory SIP requirements that apply under subparts 1 and 4 to areas designated nonattainment for any $PM_{2.5}$ NAAQS, such as: general requirements for attainment plan due dates and attainment demonstrations; provisions for demonstrating reasonable further progress (RFP); quantitative milestones; contingency measures; Nonattainment New Source Review (NNSR) permitting programs; and reasonably available control measures (RACM) (including reasonably available control technology (RACT)), among other things. The statutory attainment planning requirements of subparts 1 and 4 were established to ensure that the following goals of the CAA are met: (i) That states implement measures that provide for attainment of the $PM_{2.5}$ NAAQS as expeditiously as practicable; and, (ii) that states adopt emissions reduction strategies that will be the most effective, and the most cost-effective, at reducing $PM_{2.5}$ levels in nonattainment areas.

III. Potential One-Year Moderate Area Attainment Date Extensions

Under section 188(d) of the Act, a state may apply to EPA for up to two one-year extensions of the Moderate area attainment date, which EPA may grant if the state satisfies certain conditions. Before EPA may extend the attainment date for a Moderate area under section 188(d), EPA must determine that: (1) The state has complied with all requirements and commitments pertaining to the area in the applicable implementation plan; and (2) no more than one exceedance of the 24-hour NAAQS level for PM_{10} has occurred in the area in the year proceeding the extension year, and the annual mean concentration for PM_{10} in the area for such year is less than or equal to the standard level. The $PM_{2.5}$ Implementation Rule proposes interpretations of these provisions pertaining to $PM_{2.5}$. Currently, the only Moderate nonattainment area in Utah for which the State has indicated they may request an extension of the Moderate area attainment date is the Logan, UT/ID nonattainment area. Until this action is finalized, the Logan portion of the Logan, UT/ID nonattainment area may still qualify for this Moderate area attainment date extension, as the year prior to the Moderate area attainment date is 2015. EPA intends that, if the State requests an extension of the Moderate area attainment date for the Logan portion of the Logan, UT/ID nonattainment area before EPA finalizes this discretionary reclassification, EPA may decide not to finalize this proposed reclassification with respect to the Logan area only. If EPA then acts on the State's extension request, EPA will do so through a separate notice-and-comment rulemaking. In this proposed reclassification, we are neither proposing nor requesting comment on a potential extension.

IV. Reclassification as Serious Nonattainment Area and Serious Area SIP Requirements

A. Reclassification as Serious and Applicable Attainment Date

Section 188 of the Act outlines the process for classification of $PM_{2.5}$ nonattainment areas and establishes the applicable attainment dates. EPA has historically taken the view that under the plain meaning of the terms of section 188(b)(1) of the Act, EPA has general authority to reclassify before the applicable attainment date any areas that EPA determines cannot practicably attain the standard by such date. Accordingly, section 188(b)(1) of the Act is a general expression of delegated rulemaking authority.

The criteria for determining if an area is attaining the 2006 24-hour $PM_{2.5}$ NAAQS are set out in 40 CFR 50.13 and 40 CFR part 50, appendix N. The 2006 24-hour $PM_{2.5}$ primary and secondary standards are met when the 98th percentile 24-hour concentration, as determined in accordance with 40 CFR part 50, Appendix N, is less than or equal to 35 μg/m³. To produce a valid 24-hour standard design value, the three year average of the annual 98th percentile 24-hour average values is required. A year meets data completeness requirements when at least 75 percent of the scheduled sampling days for each quarter have valid data; however, less than complete data may be used when the resulting 24-hour design value is greater than the level of the standard. See 4.2(b), 40 CFR part 50, appendix N. The use of less than complete data is subject to the approval of EPA, which may consider factors such as monitoring site closures/moves, monitoring diligence, and nearby concentrations in determining whether to use such data. We have reviewed recent $PM_{2.5}$ monitoring data for the Salt Lake City, Provo, and the Logan portion of the Logan, UT/ID nonattainment areas available in EPA's Air Quality System (AQS) database. These data show that the 24-hour $PM_{2.5}$ levels in the Salt Lake City, Provo, and the Logan portion of the Logan, UT/ID nonattainment areas continue to be well above 35 μg/m³, the level of the 2006 $PM_{2.5}$ standard, and the recent trends in the nonattainment areas 24-hour $PM_{2.5}$ levels are not consistent with a projection of attainment by the end of 2015 (*see* Table 1 below). Additionally, for these three nonattainment areas to show attainment for the three year period of 2013–2015, the 98th percentile for 2015 would need to be near (or below) 0 μg/m³. These data show that it is impracticable for these three areas to attain the 24-hour standard by the end of 2015.

TABLE 1—24-HOUR $PM_{2.5}$ NAAQS DESIGN VALUES IN μg/m³

NAA	Site	AQS ID	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Logan portion of Logan, UT/ID NAA.	Logan, UT	490050004	65	64	42	36	40	43	42	37	46	45
Provo NAA	Lindon, UT	490494001	43	44	45	44	50	41	41	32	44	42
	North Provo, UT	490490002	39	38	37	37	42	36	35	29	45	43
	Spanish Fork, UT	490495010	36	36	36	[1] 34	42	39	42	35	46	44
Salt Lake City NAA	Bountiful, UT	490110004	40	38	38	[1] 35	38	38	40	34	35	38
	Brigham City, UT	490030003	35	35	29	35	37	42	40	37	37	37
	Harrisville, UT	490571003	36	38	35	35	38	36	37	[1] 33	[1] 35	n/a

TABLE 1—24-HOUR $PM_{2.5}$ NAAQS DESIGN VALUES IN μg/m³—Continued

NAA	Site	AQS ID	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
	Hawthorne, UT	490353006	47	48	48	46	48	44	45	38	41	43
	Magna, UT	490351001	41	40	32	29	31	33	35	30	32	35
	Ogden No. 2, UT	490570002	40	40	36	36	40	37	40	36	39	34
	Rose Park, UT	490353010	n/a	n/a	n/a	n/a	37	41	41	35	39	42
	Tooele City, UT	490450003	n/a	n/a	[1] 31	22	23	26	27	24	28	29

[1] 40 CFR part 50, appendix N, section 4.2(b) considers design values invalid when the design value is less than or equal to the level of the NAAQS, and one of more quarters have less than 75% data completeness.

In accordance with section 188(b)(1) of the Act, EPA is proposing to reclassify the Salt Lake City, Provo, and the Logan portion of the Logan, UT/ID nonattainment areas from Moderate to Serious nonattainment for the 2006 24-hour $PM_{2.5}$ standard of 35 μg/m³, based on EPA's determination that the Salt Lake City, Provo, and the Logan portion of the Logan, UT/ID areas cannot practicably attain this standard by the applicable attainment date of December 31, 2015.

Under section 188(c)(2) of the Act, the attainment date for a Serious area ''shall be as expeditiously as practicable but no later than the end of the tenth calendar year beginning after the areas designation as nonattainment . . .'' The Salt Lake City, Provo, and the Logan portion of the Logan, UT/ID areas were designated nonattainment for the 2006 $PM_{2.5}$ standard effective December 14, 2009.[3] Therefore, upon final reclassification of the Salt Lake City, Provo, and the Logan portion of the Logan, UT/ID areas as Serious nonattainment areas, the latest permissible attainment date under section 188(c)(2) of the Act, for purposes of the 2006 $PM_{2.5}$ standard in these areas, will be December 31, 2019.

B. Clean Air Act Requirements for Serious $PM_{2.5}$ Nonattainment Area Plans

Upon reclassification as Serious nonattainment areas for the 2006 $PM_{2.5}$ NAAQS, Utah will be required to submit additional SIP revisions to satisfy the statutory requirements of subpart 4 of part D, title I of the Act.

The Serious area SIP elements that Utah will be required to submit are as follows:

1. Provisions to assure that the best available control measures (BACM), including best available control technologies (BACT) for stationary sources, for the control of direct $PM_{2.5}$ and $PM_{2.5}$ precursors shall be implemented no later than four years after the area is reclassified (CAA section 189(b)(1)(B));

2. A demonstration (including air quality modeling) that the plan provides for attainment as expeditiously as practicable but no later than December 31, 2019, or where the state is seeking an extension of the attainment date under section 188(e), a demonstration that attainment by December 31, 2019 is impracticable and that the plan provides for attainment by the most expeditious alternative date practicable and no later than December 31, 2024 (CAA sections 188(c)(2), 188(e), and 189(b)(1)(A));

3. Plan provisions that require RFP (CAA 172(c)(2));

4. Quantitative milestones which are to be achieved every three years until the area is redesignated attainment and which demonstrate RFP toward attainment by the applicable date (CAA section 189(c));

5. Provisions to assure that control requirements applicable to major stationary sources of $PM_{2.5}$ also apply to major stationary sources of $PM_{2.5}$ precursors, except where the state demonstrates to EPA's satisfaction that such sources do not contribute significantly to $PM_{2.5}$ levels that exceed the standard in the area (CAA section 189(e));

6. A comprehensive, accurate, current inventory of actual emissions from all sources of $PM_{2.5}$ and $PM_{2.5}$ precursors in the area (CAA section 172(c)(3));

7. Contingency measures to be implemented if the area fails to meet RFP or to attain by the applicable attainment date (CAA section 172(c)(9)); and

8. Revisions to the NNSR program to lower the applicable ''major stationary source''[4] thresholds from 100 tons per year (tpy) to 70 tpy (CAA section 189(b)(3)).

As described above, EPA proposed a rulemaking to provide guidance to states on the attainment planning requirements in subparts 1 and 4 of part D, title I of the Act that apply to areas designated nonattainment for $PM_{2.5}$ (80 FR 15340; March 23, 2015).

C. Deadline for Submittal of Serious Area Plan Elements

For an area reclassified as a Serious nonattainment area before the applicable attainment date under CAA section 188(b)(1), section 189(b)(2) requires the State to submit the required BACM provisions ''no later than 18 months after reclassification of the area as a Serious Area'' and to submit the required attainment demonstration ''no later than four years after reclassification of the area to Serious.'' Section 189(b)(2) establishes outer bounds on the SIP submission deadlines and does not preclude EPA's establishment of earlier deadlines as necessary or appropriate to assure consistency among the required submissions and to implement the statutory requirements.

If a final reclassification of the Salt Lake City, Provo, and Logan portion of the Logan, UT/ID $PM_{2.5}$ nonattainment areas to Serious becomes effective by early 2016, the Act provides the State with up to 18 months after this date (*i.e.,* until mid-2017) to submit the required BACM provisions. Because an up-to-date emissions inventory serves as the foundation for a state's BACM and BACT determinations, EPA also proposes to require the State to submit the emissions inventory required under CAA section 172(c)(3) within 18 months after the effective date of final reclassification. Similarly, because an effective evaluation of BACM and BACT measures requires evaluation of the precursor pollutants that must be controlled to provide for expeditious attainment in the area, if the State chooses to submit an optional precursor insignificance demonstration to support a determination to exclude a $PM_{2.5}$ precursor from the required control measure evaluations for the area, EPA proposes to require the State to submit any such demonstration by this same date. An 18-month timeframe for submission of these plan elements is consistent with both the timeframe for submission of BACM provisions under

[3] *See* 74 FR 58688 (November 13, 2009).

[4] For any Serious area, the terms ''major source'' and ''major stationary source'' include any stationary source that emits or has the potential to emit at least 70 tons per year of PM_{10} (CAA section 189(b)(3)).

CAA section 189(b)(2) and the timeframe for submission of subpart 1 plan elements under section 172(b) of the Act.[5]

EPA proposes to require the State to submit the attainment demonstration required under section 189(b)(1)(A) and the remaining attainment-related plan elements no later than three years after the effective date of final reclassification or by December 31, 2018, whichever is earlier. The attainment-related plan elements that we propose to require within the same three-year timeframe as the attainment demonstration are: (1) The RFP demonstration required under section 172(c)(2); (2) the quantitative milestones required under section 189(c); (3) any additional control measures necessary to meet the requirements of section 172(c)(6); and (4) the contingency measures required under section 172(c)(9). Although section 189(b)(2) generally provides for up to four years after a discretionary reclassification for the State to submit the required attainment demonstration, it is appropriate in this case for EPA to establish an earlier SIP submission deadline to assure timely implementation of the statutory requirements.

As discussed in the Background section, EPA designated the Salt Lake City, Provo, and Logan, UT/ID areas as nonattainment for the 2006 $PM_{2.5}$ standard effective December 14, 2009.[6] On January 4, 2013, the DC Circuit Court of Appeals issued its decision in *NRDC* remanding EPA's 2007 $PM_{2.5}$ Implementation Rule and directing EPA to repromulgate it in accordance with the requirements of subpart 4.[7] In response to the *NRDC* decision, EPA undertook a rulemaking to classify all $PM_{2.5}$ nonattainment areas as Moderate nonattainment and begin implementing the $PM_{2.5}$ NAAQS under subpart 4. Effective July 2, 2014, EPA classified all areas previously designated nonattainment for the 1997 and/or 2006 $PM_{2.5}$ NAAQS as Moderate nonattainment under subpart 4 and established a December 31, 2014 deadline for states to submit Moderate area SIP elements required for these areas.[8] These unusual circumstances have significantly shortened the timeframes ordinarily allowed under the Act for EPA and the states to address the statutory SIP requirements following reclassification of an area from Moderate to Serious nonattainment under subpart 4.[9]

Our proposal to require the State to submit the attainment demonstration and other attainment-related plan elements no later than three years after reclassification or by December 31, 2018, whichever is earlier, is supported by the overall structure and purpose of the attainment planning requirements in part D, title I of the Act. Section 188(b)(1) provides EPA with discretionary authority to reclassify an area as Serious nonattainment at any time before the applicable attainment date, based on a determination that the area cannot practicably attain the NAAQS by the Moderate area attainment date. Under normal circumstances, where EPA reclassifies an area within three years after its designation as nonattainment, as contemplated in CAA section 188(b)(1)(B),[10] the required BACM provisions would be due no later than 18 months after reclassification (*i.e.,* no later than 4.5 years after designation) and the required attainment demonstration would be due no later than four years after reclassification (*i.e.,* no later than seven years after designation).[11] In these circumstances, the Serious area attainment demonstration would be due at least three years before the outermost Serious area attainment date for the area,[12] thus providing EPA with sufficient time to evaluate the submitted plan well in advance of the statutory attainment date. However, in situations such as this, where EPA reclassifies an area pursuant to its discretionary reclassification authority *later* than three years after the area's designation as nonattainment, it is appropriate for EPA to consider the outermost Serious area attainment date applicable to the area in setting a deadline for the State to submit the required elements of the Serious area attainment plan.

Upon reclassification as Serious, the Salt Lake City, Provo, and Logan portion of the Logan, UT/ID $PM_{2.5}$ nonattainment areas will be subject to a Serious area attainment date no later than December 31, 2019.[13] Sections 189(b)(1)(A) and 189(c) of the Act require the State to submit a demonstration that the plan provides for attainment of the $PM_{2.5}$ standard by this date, including quantitative milestones which are to be achieved every three years until the area is redesignated attainment and which demonstrate reasonable further progress toward attainment by this date. If EPA reclassifies the Salt Lake City, Provo, and Logan portion of the Logan, UT/ID area effective in early 2016 and allows the State four years following reclassification (*i.e.,* potentially until early 2020) to submit the attainment demonstration and related plan elements, these Serious area plan provisions would not be due until after the latest permissible statutory attainment date for the area (December 31, 2019) has come and gone. Thus, under such circumstances, allowing the maximum four-year timeframe for submission of the required attainment demonstration and related plan elements would frustrate the statutory design and severely constrain EPA's ability to ensure that the State is implementing the applicable statutory requirements in a timely manner.

Therefore, it is appropriate for EPA to require Utah to submit the required attainment demonstration and other attainment-related plan elements no later than three years after final reclassification or by December 31, 2018, whichever is earlier, so that EPA has adequate time to review and act on the State's submission prior to the latest permissible attainment date for the area under section 188(c)(2), which is

[5] Section 172(b) requires EPA to establish, concurrent with nonattainment area designations, a schedule extending no later than 3 years from the date of the nonattainment designation for states to submit plans or plan revisions meeting the applicable requirements of sections 110(a)(2) and 172(c) of the CAA.

[6] 74 FR 58688 (November 13, 2009).

[7] *NRDC* v. *EPA,* 706 F.3d 428 (D.C. Cir. 2013).

[8] 79 FR 31566 (June 2, 2014). EPA notes that some states had already made SIP submissions intended to meet applicable nonattainment plan requirements as interpreted in the remanded 2007 $PM_{2.5}$ Implementation Rule. Accordingly, the new SIP submission deadline provided the opportunity for states to revise or supplement their prior submissions, as necessary or appropriate to meet subpart 4 requirements.

[9] For areas designated nonattainment after November 15, 1990, section 188(b)(1)(B) of the Act requires that EPA "reclassify appropriate areas within 18 months after the required date for the State's submission of a SIP for the Moderate Area." Read together with section 189(a)(2)(B), which requires states to submit Moderate Area plans within 18 months after nonattainment designations, section 188(b)(1)(B) generally contemplates that EPA would reclassify appropriate areas as Serious nonattainment no later than 36 months (3 years) after initial nonattainment designations. Under these circumstances, the required Serious area attainment demonstration would normally be submitted no later than 7 years after initial designation (4 years after reclassification), which is 3 years before the latest permissible attainment date under CAA section 188(c)(2).

[10] *Id.*

[11] CAA section 189(b)(2). By contrast, for an area that is reclassified as Serious by operation of law *after* the applicable attainment date, which may be as late as the end of the 6th year after the area's designation as nonattainment (CAA section 188(b)(1)), the state must submit both the BACM provisions and the Serious area attainment demonstration no later than 18 months after reclassification. *Id.*

[12] Under CAA section 188(c)(2), the latest permissible attainment date for a Serious $PM_{2.5}$ nonattainment area is no later than the end of the tenth calendar year beginning after the area's designation as nonattainment.

[13] *Id.*

December 31, 2019. This timeframe for the required Serious area plan submissions is appropriate to assure consistency among the required submissions and to implement the statutory requirements in a timely manner.

Finally, EPA proposes to require that the State submit revised NNSR program requirements no later than 18 months after final reclassification. The Act does not specify a deadline for the State's submission of SIP revisions to meet NNSR program requirements to lower the ''major stationary source'' threshold from 100 tons per year (tpy) to 70 tpy (CAA section 189(b)(3)) and to address the control requirements for major stationary sources of $PM_{2.5}$ precursors (CAA section 189(e)) [14] following reclassification of a Moderate $PM_{2.5}$ nonattainment area as Serious nonattainment under subpart 4. Pursuant to EPA's gap-filling authority in CAA section 301(a) and to effectuate the statutory control requirements in section 189 of the Act, EPA proposes to require the State to submit these NNSR SIP revisions, as well as any necessary analysis of and additional control requirements for major stationary sources of $PM_{2.5}$ precursors, no later than 18 months after the effective date of final reclassification of the Salt Lake City, Provo, and Logan portion of the Logan, UT/ID area as Serious nonattainment for the 2006 $PM_{2.5}$ standard. This due date will ensure that necessary control requirements for major sources are established well in advance of the required attainment demonstration. An 18-month timeframe for submission of the NSR SIP revisions also aligns with the statutory deadline for submission of BACM and BACT provisions and the broader analysis of $PM_{2.5}$ precursors for potential controls on existing sources in the area.

V. Proposed Action

Pursuant to CAA section 188(b)(1), EPA is proposing to reclassify the Salt Lake City, Provo, and the Logan portion of the Logan, UT/ID $PM_{2.5}$ nonattainment areas as Serious nonattainment for the 2006 $PM_{2.5}$ standard based on the Agency's determination that the Salt Lake City, Provo, and the Logan portion of the Logan, UT/ID areas cannot practicably attain the 2006 $PM_{2.5}$ standard by the Moderate area attainment date of December 31, 2015. Upon final reclassification as a Serious nonattainment area, Utah will be required to submit, within 18 months after the effective date of reclassification, an updated emissions inventory, an optional precursor insignificance demonstration, and provisions to assure that BACM shall be implemented no later than four years after the effective date of reclassification. The due date for the remaining Serious area plan elements will be three years after the effective date of the final action or December 31, 2018, whichever is earlier, to reclassify the areas. The NNSR SIP revisions will be due 18 months following reclassification.

[14] Section 189(e) requires that the control requirements applicable to major stationary sources of $PM_{2.5}$ also apply to major stationary sources of $PM_{2.5}$ precursors, except where the state demonstrates to EPA's satisfaction that such sources do not contribute significantly to $PM_{2.5}$ levels that exceed the standard in the area.

VI. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at *http://www2.epa.gov/laws-regulations/laws-and-executive-orders.*

A. Executive Order 12866: Regulatory Planning and Review, and Executive Order 13563: Improving Regulation and Regulatory Review

This action is not a significant regulatory action and was therefore not submitted to the Office of Management and Budget (OMB) for review.

B. Paperwork Reduction Act (PRA)

This action does not impose an information collection burden under the PRA because it does not contain any information collection activities.

C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. This action will not impose any requirements on small entities. This proposed rule would reclassify the Salt Lake City, Provo, and the Logan portion of the Logan, UT/ID nonattainment areas as Serious nonattainment for the 2006 $PM_{2.5}$ NAAQS, and would not itself regulate small entities.

D. Unfunded Mandates Reform Act (UMRA)

This action does not contain an unfunded mandate of $100 million or more as described in UMRA, and does not significantly or uniquely affect small governments. This proposed action would reclassify the Salt Lake City, Provo, and the Logan portion of the Logan, UT/ID nonattainment areas as Serious nonattainment for the 2006 $PM_{2.5}$ NAAQS, and would not itself impose any federal intergovernmental mandate. The proposed action would not require any tribes to submit implementation plans.

E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

F. Executive Order 13175: Coordination With Indian Tribal Governments

Executive Order 13175, entitled ''Consultation and Coordination with Indian Governments'' (65 FR 67249, November 9, 2000), requires EPA to develop an accountable process to ensure ''meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.'' ''Policies that have Tribal implications'' is defined in the Executive Order to include regulations that have ''substantial direct effects on one or more Indian tribes, on the relationship between the Federal government and the Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian Tribes.''

There are no Indian tribes located within the boundaries of the Salt Lake City, Provo, and the Logan portion of the Logan, UT/ID nonattainment areas for the 2006 $PM_{2.5}$ NAAQS. EPA concludes that the proposed reclassification would not have tribal implications for the purposes of Executive Order 13175.

G. Executive Order 13045, Protection of Children From Environmental Health Risks and Safety Risks

EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that EPA has reason to believe disproportionately affect children, per the definition of ''covered regulatory action'' in section 2–202 of the Executive Order. This proposed action is not subject to Executive Order 13045 because it would only reclassify the Salt Lake City, Provo, and the Logan portion of the Logan, UT/ID nonattainment areas as Serious nonattainment for the 2006 $PM_{2.5}$ NAAQS, triggering Serious area planning requirements under the CAA. This proposed action does not establish an environmental standard intended to mitigate health or safety risks.

H. Executive Order 13211, Actions That Significantly Affect Energy Supply, Distribution, or Use

This proposed action is not subject to Executive Order 13211, because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act

This rulemaking does not involve technical standards.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

EPA has determined that this action will not have potential disproportionately high and adverse human health or environmental effects on minority or low-income populations because it does not affect the level of protection provided to human health or the environment. This proposed action would only reclassify the Salt Lake City, Provo, and the Logan portion of the Logan, UT/ID nonattainment areas as Serious nonattainment for the 2006 $PM_{2.5}$ NAAQS, triggering additional Serious area planning requirements under the CAA.

List of Subjects in 40 CFR Part 81

Environmental protection, Air pollution control, Carbon monoxide, Intergovernmental relations, Incorporation by reference, Lead, Nitrogen dioxide, Ozone, Particulate matter, Reporting and recordkeeping requirements, Sulfur oxides, Volatile organization compounds.

Authority: 42 U.S.C. 7401 *et seq.*

Dated: October 27, 2015.

Shaun L. McGrath,

Regional Administrator, Region 8.

[FR Doc. 2015–28359 Filed 11–6–15; 8:45 am]

BILLING CODE 6560–50–P

DEPARTMENT OF HOMELAND SECURITY

Coast Guard

46 CFR Parts 401, 403, and 404

[USCG–2015–0497; 1625–AC22]

Great Lakes Pilotage Rates—2016 Annual Review and Changes to Methodology

AGENCY: Coast Guard, DHS.

ACTION: Notice of proposed rulemaking; extension of public comment period.

SUMMARY: The Coast Guard is extending, for 30 days, the period for submitting public comments on the notice of proposed rulemaking (NPRM). The extension responds to a request made by several members of the public.

DATES: The comment period for the NPRM published on September 10, 2015 (80 FR 54484) is extended. Comments and related material must be submitted to the docket by December 9, 2015.

ADDRESSES: You may submit comments identified by docket number USCG–2015–0497 using the Federal eRulemaking Portal at *http://www.regulations.gov.* See the ‘‘Public Participation and Request for Comments’’ portion of the **SUPPLEMENTARY INFORMATION** section for further instructions on submitting comments.

FOR FURTHER INFORMATION CONTACT: If you have questions on this proposed rule, call or email Mr. Todd Haviland, Director, Great Lakes Pilotage, Commandant (CG–WWM–2), Coast Guard; telephone 202–372–2037, email *Todd.A.Haviland@uscg.mil,* or fax 202–372–1914.

SUPPLEMENTARY INFORMATION:

A. Public Participation and Comments

We view public participation as essential to effective rulemaking, and will consider all comments and material received during the comment period. Your comment can help shape the outcome of this rulemaking. If you submit a comment, please include the docket number for this rulemaking, indicate the specific section of this document to which each comment applies, and provide a reason for each suggestion or recommendation.

We encourage you to submit comments through the Federal eRulemaking Portal at *http://www.regulations.gov.* If your material cannot be submitted using *http://www.regulations.gov,* contact the person in the **FOR FURTHER INFORMATION CONTACT** section of this document for alternate instructions. Documents mentioned in this notice, and all public comments, are in our online docket at *http://www.regulations.gov* and can be viewed by following that Web site's instructions. Additionally, if you go to the online docket and sign up for email alerts, you will be notified when comments are posted or a final rule is published.

We accept anonymous comments. All comments received will be posted without change to *http://www.regulations.gov* and will include any personal information you have provided. For more about privacy and the docket, you may review a Privacy Act notice regarding the Federal Docket Management System in the March 24, 2005, issue of the **Federal Register** (70 FR 15086).

B. Regulatory History and Information

We published the NPRM for this rulemaking on September 10, 2015 (80 FR 54484). It proposed changes to the methodology by which the Coast Guard reviews and adjusts rates for Great Lakes pilotage, and also proposed rates for the 2016 shipping season. The NPRM announced a 60 day public comment period ending November 9, 2015. We have received a request from several members of the public for an extension of the comment period, which we have decided to grant in light of the importance of our proposed changes to the ratemaking methodology. With this extension, the total length of the public comment period will now be 90 days.

This notice is issued under authority of 5 U.S.C. 552(a).

November 5, 2015.

Gary C. Rasicot,

Director, Marine Transportation Systems, U.S. Coast Guard.

[FR Doc. 2015–28590 Filed 11–5–15; 4:15 pm]

BILLING CODE 9110–04–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 648

[Docket No. 150903814–5814–01]

RIN 0648–XE171

Fisheries of the Northeastern United States; Summer Flounder, Scup, and Black Sea Bass Fisheries; 2016–2018 Summer Flounder, Scup, and Black Sea Bass Specifications

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Proposed specifications; request for comments.

SUMMARY: NMFS proposes specifications for the 2016–2018 summer flounder and scup fisheries and for the 2016–2017 black sea bass fishery. The implementing regulations for the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan require us to publish specifications for the upcoming fishing year for each of these species and to provide an opportunity for public comment. This action is intended to propose for implementation specifications necessary to constrain harvest for these three species within

scientifically sound recommendations to prevent overfishing.

DATES: Comments must be received on or before November 24, 2015.

ADDRESSES: An environmental assessment (EA) was prepared for the specifications and describes the proposed action and other considered alternatives, and provides an analysis of the impacts of the proposed measures and alternatives. Copies of the Specifications Document, including the EA and the Initial Regulatory Flexibility Analysis (IRFA), are available on request from Dr. Christopher M. Moore, Executive Director, Mid-Atlantic Fishery Management Council, Suite 201, 800 North State Street, Dover, DE 19901. These documents are also accessible via the Internet at *http://www.mafmc.org.*

You may submit comments on this document, identified by NOAA–NMFS–2015–0117, by either of the following methods:

Electronic Submission: Submit all electronic public comments via the Federal e-Rulemaking Portal.

1. Go to *www.regulations.gov/#!docketDetail;D=NOAA-NMFS-2015-0117,*
2. Click the ''Comment Now!'' icon, complete the required fields
3. Enter or attach your comments.

-OR-

Mail: Submit written comments to John Bullard, Regional Administrator, National Marine Fisheries Service, 55 Great Republic Drive, Gloucester, MA 01950. Mark the outside of the envelope, ''Comments on the Proposed Rule for FSB Specifications.''

Instructions: Comments sent by any other method, to any other address or individual, or received after the end of the comment period, may not be considered by NMFS. All comments received are part of the public record and will generally be posted for public viewing on *www.regulations.gov* without change. All personal identifying information (*e.g.,* name, address, etc.), confidential business information, or otherwise sensitive information submitted voluntarily by the sender will be publicly accessible. NMFS will accept anonymous comments (enter ''N/A'' in the required fields if you wish to remain anonymous).

FOR FURTHER INFORMATION CONTACT: Moira Kelly, Fishery Policy Analyst, (978) 281–9218.

SUPPLEMENTARY INFORMATION:

General Specification Background

The Mid-Atlantic Fishery Management Council and the Atlantic States Marine Fisheries Commission cooperatively manage the summer flounder, scup, and black sea bass fisheries. Fishery specifications in these fisheries include various catch and landing subdivisions, such as the commercial and recreational sector annual catch limits (ACLs), annual catch targets (ACTs), and sector-specific landing limits (*i.e.,* the commercial fishery quota and recreational harvest limit) for the upcoming fishing year. Rulemaking for measures used to manage the recreational fisheries (minimum fish sizes, open seasons, and bag limits) for these three species occurs separately and typically takes place in the spring of each year.

The Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan (FMP) and its implementing regulations establish the Council's process for establishing specifications. The management units specified in the FMP include summer flounder (*Paralichthys dentatus*) in U.S. waters of the Atlantic Ocean from the southern border of North Carolina northward to the U.S./Canada border, and scup (*Stenotomus chrysops*) and black sea bass (*Centropristis striata*) in U.S. waters of the Atlantic Ocean from 35° 13.3' N. lat. (the latitude of Cape Hatteras Lighthouse, Buxton, NC) northward to the U.S./Canada border. The FMP also contains formulas to divide the specification catch limits into commercial and recreational fishery allocations, state-by-state quotas, and quota periods, depending on the species in question.

The Council's Scientific and Statistical Committee (SSC) met July 22–23, 2015, to recommend acceptable biological catches (ABC) for the 2016–2018 these fisheries. The Summer Flounder, Scup, and Black Sea Bass Monitoring Committees met July 23–24, 2015, to discuss specification-related recommendations for the three fisheries, to recommend offsets from the ACL to account for management uncertainty, and to discuss commercial management measure recommendations, as appropriate. Note, because of a planned black sea bass benchmark stock assessment scheduled for late 2016, the SSC only recommended interim ABCs for 2016 and 2017. More details on the SSC's discussions are provided in the fishery-specific sections below.

Following the SSC and Monitoring Committee meetings, the Council and the Commission's Summer Flounder, Scup, and Black Sea Bass Management Board met jointly on August 12, 2015, to consider the recommendations of the SSC, the three Monitoring Committees, and public comments, and to make their specification recommendations. The SSC and the Council met subsequently to reconsider the black sea bass recommendations. More complete details on the SSC, Monitoring Committee, and Council meeting deliberations can be found on the Council's Web site (*www.mafmc.org*).

While the Board action was finalized at the August meeting, the Council's recommendations must be reviewed by NMFS to ensure that they comply with the FMP and applicable law. NMFS also must conduct notice-and-comment rulemaking to propose and implement the final specifications.

TABLE 1—SUMMARY OF THE PROPOSED 2016–2018 SUMMER FLOUNDER AND SCUP SPECIFICATIONS AND 2016–2017 BLACK SEA BASS SPECIFICATIONS

		Summer flounder			Scup			Black sea bass
		2016	2017	2018	2016	2017	2018	2016–2017
Overfishing Limit (OFL)	million lb	18.06	19.82	22.40	35.80	32.09	29.68	n/a
	mt	8,194	8,991	10,159	16,238	14,556	13,464	n/a
ABC	million lb	16.26	15.86	15.68	31.11	28.40	27.05	6.67
	mt	7,375	7,193	7,111	14,110	12,881	12,270	3,024
Commercial ACL/ACT	million lb	9.42	9.19	9.10	24.26	22.15	21.10	3.15
	mt	4,275	4,168	4,127	11,006	10,047	9,571	1,428
Recreational ACL/ACT	million lb	6.83	6.67	6.56	6.84	6.25	5.95	3.52
	mt	3,100	3,025	2,984	3,104	2,834	2,699	1,597
Commercial Quota	million lb	8.12	7.91	7.89	20.47	18.38	17.34	2.71
	mt	3,685	3,590	3,581	9,284	8,337	7,866	1,230

TABLE 1—SUMMARY OF THE PROPOSED 2016–2018 SUMMER FLOUNDER AND SCUP SPECIFICATIONS AND 2016–2017 BLACK SEA BASS SPECIFICATIONS—Continued

		Summer flounder			Scup			Black sea bass
		2016	2017	2018	2016	2017	2018	2016–2017
Recreational Harvest Limit	million lb	5.42	5.28	5.26	6.09	5.50	5.21	2.82
	mt	2,457	2,393	2,387	2,763	2,495	2,361	1,280

Consistent with the summer flounder, scup, and black sea bass regulations, the sum of the recreational and commercial sector ACLs are equal to the ABCs. ACL is an expression of total catch (*i.e.,* landings and dead discarded fish). To derive the ACLs, the sum of the sector-specific projected discards are removed from the ABCs to derive the landing allowances. The resulting landing allowance is apportioned to the commercial and recreational sectors by applying the FMP allocation criteria: (1) Summer flounder—60 percent to the commercial fishery and 40 percent to the recreational fishery; (2) scup—78 percent to the commercial fishery and 22 percent to the recreational fishery; and (3) black sea bass—49 percent to the commercial fishery and 51 percent to the recreational fishery. Using this method ensures that each sector is accountable for its respective discards, rather than simply apportioning the ABC by the allocation percentages to derive the sector ACLs. Although the derived ACLs are not split exactly according to the FMP-specified allocations, the landing portions of the ACLs preserve the appropriate allocation split, consistent with the FMP. This process results in the commercial and recreational ACLs, commercial quotas, and recreational harvest limits shown in Table 1. The specific discard values projected for each fishery and sector are described in more detail below.

Proposed Specifications

Summer Flounder

This rulemaking proposes the Council's ABC recommendation and the commercial and recreational catch limits associated with that ABC for fishing years 2016–2018.

The 2015 stock assessment update used to established these specifications was based on the approved model from the 2013 benchmark assessment, updated to include data through 2014 (*http://www.nefsc.noaa.gov/publications/crd/crd1513/crd1513.pdf*). The assessment update indicates that summer flounder are not overfished, but that overfishing did occur in 2014. The stock status change was primarily due to four years of below average recruitment, leading to fewer summer flounder being available to the fishery than had previously been predicted.

The OFL for 2016 was estimated to be 18.06 million lb (8,194 mt), a reduction of 33 percent from 2015. At the request of the Council, the SSC deviated from the standard Risk Policy and ABC Control Rule and recommended ABCs that "phase in" the required reduction in order to minimize the economic impact that such a reduction in a single year's catch limits would cause. Using the standard ABC Control Rule, the 2016 ABC would have been 30 percent below the OFL to account for scientific uncertainty. As proposed, this 30-percent buffer would be phased-in over the next three years by increasing the buffer by a third in each year. That is, a 10-buffer in 2016, a 20-percent buffer in 2017, and, finally, the full 30-percent buffer in 2018. Each of the ABCs derived from this approach have a less than 50-percent probability of resulting in overfishing. This results in relatively stable specifications because the current projections indicate a modest increase in the OFL over these three years. The SSC has requested a stock assessment update for next summer and intends to evaluate the available information to determine if the proposed ABCs remain appropriate.

The Summer Flounder Monitoring Committee met to discuss the SSC's recommendations and to determine whether additional reductions in the catch limits were necessary to account for management uncertainty. Because the recreational fishery in recent years has not substantially exceeded the recreational harvest limit, discards in the commercial fishery have been relatively low, and the commercial landings monitoring and fishery closure system is timely, the Summer Flounder Monitoring Committee determined that no additional reductions to account for management uncertainty were necessary. Therefore, it was recommended that the ACT (both commercial and recreational) should be set equal to ACL for all three years. Removing the estimated discards results in the commercial quotas and recreational harvest limits shown below in Table 2.

TABLE 2—PROPOSED 2016–2018 SUMMER FLOUNDER SPECIFICATIONS AND CALCULATIONS

	2015 (current)		2016		2017		2018	
	million lb	mt	million lb	mt	million lb	mt	million lb	mt
OFL	27.06	12,275	18.06	8,194	19.82	8,991	22.4	10,159
ABC	22.77	10,329	16.26	7,375	15.86	7,193	15.7	7,111
ABC Landings Portion	18.45	8,368	13.54	6,142	13.19	5,983	13.2	5,968
ABC Discards Portion	4.32	1,961	2.72	1,233	2.67	1,210	2.52	1,143
Commercial ACL	13.34	6,049	9.43	4,275	9.19	4,168	9.1	4,127
Commercial ACT	13.34	6,049	9.43	4,275	9.19	4,168	9.1	4,127
Projected Commercial Discards	2.27	1,028	1.30	590	1.28	579	1.21	547
Commercial Quota	11.07	5,021	8.12	3,685	7.91	3,590	7.89	3,581
Recreational ACL	9.44	4,280	6.84	3,100	6.67	3,025	6.58	2,984
Recreational ACT	9.44	4,280	6.84	3,100	6.67	3,025	6.58	2,984
Projected Recreational Discards	2.06	933	1.42	643	1.39	631	1.32	596
Recreational Harvest Limit	7.38	3,347	5.42	2,457	5.28	2,393	5.26	2,387

The Council and Board considered the SSC and Summer Flounder Monitoring Committee recommendations before concurring with the catch recommendations specified in Table 2. Fishing under these catch limits for 2016 through 2018 is not expected to compromise the summer flounder stock, nor will fishing at this level present a unacceptably high likelihood of overfishing. The Council recommended all other commercial management measures remain status quo.

Table 3 presents the proposed state allocations for 2016–2018 using the commercial state quota allocations described in the FMP. Any commercial quota adjustments to account for overages will be published in the **Federal Register** prior to the start of the respective fishing year. The final rule for this action will include any necessary quota overage reductions for fishing year 2016.

TABLE 3—2016–2018 PROPOSED INITIAL SUMMER FLOUNDER STATE COMMERCIAL QUOTAS

State	FMP percent share	2016 initial quota		2017 initial quota		2018 initial quota	
		lb	kg	lb	kg	lb	kg
ME	0.04756	3,864	1,753	3,764	1,707	3,755	1,703
NH	0.00046	37	17	36	17	36	16
MA	6.82046	554,097	251,334	539,812	244,854	538,459	244,240
RI	15.68298	1,274,091	577,917	1,241,244	563,019	1,238,133	561,607
CT	2.25708	183,366	83,173	178,639	81,029	178,191	80,826
NY	7.64699	621,244	281,791	605,228	274,527	603,711	273,838
NJ	16.72499	1,358,744	616,315	1,323,715	600,427	1,320,397	598,921
DE	0.01779	1,445	656	1,408	639	1,404	637
MD	2.0391	165,657	75,141	161,387	73,204	160,982	73,020
VA	21.31676	1,731,781	785,522	1,687,135	765,271	1,682,906	763,353
NC	27.44584	2,229,709	1,011,378	2,172,227	985,305	2,166,781	982,835
Total	100	8,124,035	3,684,997	7,914,596	3,589,997	7,894,754	3,580,997

Note: Kilograms are as converted from pounds and do not sum to the converted total due to rounding. Rounding of quotas results in totals slightly exceeding 100 percent.

Scup

This rule proposes the Council's ABC recommendation and the commercial and recreational catch limits associated with that ABC for fishing years 2016–2018.

The SSC reviewed the results of the 2015 scup benchmark stock assessment and determined that an update to the existing control rule was warranted. The SSC determined that a lower coefficient of variation, or CV, to estimate scientific uncertainty was acceptable for the scup stock assessment instead of the default 100-percent CV. The SSC's ABC recommendations are based on a 60-percent CV from the OFL and are, therefore, higher than they would have otherwise been. In addition, the 2016 ABC is based on an assumption that only 75 percent of the 2015 ABC would be harvested, consistent with recent fishery performance. The stock assessment upon which the specifications are based indicates that scup biomass is currently lower than in recent years, but still more than double the biomass target. Therefore, the proposed catch limits are lower than the specifications for fishing year 2015, but are still relatively high compared to recent landings.

The Scup Monitoring Committee met to discuss the SSC's recommendations and to determine whether additional reductions in the catch limits were necessary to account for management uncertainty. Because both the recreational and commercial fisheries have not reached their respective landings limits because of the very high quotas, and the landings monitoring and fishery closure system is timely, the Monitoring Committee determined that no additional reductions to account for management uncertainty were necessary. Therefore, it was recommended that the ACTs (both commercial and recreational) should be set equal to the respective ACLs for fishing years 2016–2018. The Council and Board considered the SSC and Scup Monitoring Committee recommendations before concurring with the catch recommendations specified in Table 2. Fishing under these catch limits for 2016 through 2018 is not expected to compromise the scup stock, nor will fishing at this level present an unacceptably high likelihood of overfishing. The Council recommended all other commercial management measures remain status quo. After deducting the appropriate sector-specific discards, the 2016–2018 commercial quotas and recreational harvest limits would be as described below in Table 4.

TABLE 4—PROPOSED SCUP SPECIFICATIONS

	2015 (current)		2016		2017		2018	
	mil lb	mt	mil lb	mt	mil lb	mt	mil lb	mt
OFL	47.8	21,680	35.8	16,238	32.09	14,556	29.7	13,464
ABC	33.77	15,320	31.11	14,110	28.4	12,881	27.1	12,270
ABC Landings Portion	28.03	12,716	26.56	12,047	23.88	10,832	22.6	10,227
ABC Discards Portion	5.74	2,604	4.55	2,063	4.52	2,049	4.5	2,043
Commercial ACL	26.34	11,950	24.26	11,006	22.15	10,047	21.1	9,571
Commercial ACT	26.34	11,950	24.26	11,006	22.15	10,047	21.1	9,571
Projected Commercial Discards	5.11	2,318	3.8	1,721	3.77	1,710	3.76	1,705
Commercial Quota	21.23	9,632	20.47	9,284	18.38	8,337	17.3	7,866
Recreational ACL	7.92	3,592	6.84	3,104	6.25	2,834	5.95	2,699
Recreational ACT	7.92	3,592	6.84	3,104	6.25	2,834	5.95	2,699

TABLE 4—PROPOSED SCUP SPECIFICATIONS—Continued

	2015 (current)		2016		2017		2018	
	mil lb	mt	mil lb	mt	mil lb	mt	mil lb	mt
Projected Recreational Discards	0.67	304	0.75	342	0.75	339	0.75	338
Recreational Harvest Limit	6.8	3,288	6.09	2,763	5.5	2,495	5.21	2,361

The scup commercial quota is divided into three commercial fishery quota periods: Winter I; Summer; and Winter II. This rule proposes commercial scup quotas for these three periods for 2016–2018, consistent with the allocation structure of the FMP. If there is a commercial overage applicable to the 2016 scup commercial quota, notice of that overage will be included in the final rule for this action. Commercial overages applicable to fishing years 2017 and 2018 will be provided in a **Federal Register** notice published prior to the start of the fishing year. The period quotas are detailed in Table 5. Unused Winter I quota may be carried over for use in the Winter II period.

TABLE 5—PROPOSED COMMERCIAL SCUP QUOTA ALLOCATIONS FOR 2016–2018 BY QUOTA PERIOD

Quota period	Percent share	2016 Initial quota		2017 Initial quota		2018 Initial quota	
		lb	mt	lb	mt	lb	mt
Winter I	45.11	9,232,987	4,188	8,291,190	3,761	7,822,778	3,548
Summer	38.95	7,972,176	3,616	7,158,986	3,247	6,754,538	3,064
Winter II	15.94	3,262,554	1,480	2,929,762	1,329	2,764,245	1,254
Total	100.0	20,467,716	9,284	18,379,939	8,337	17,341,562	7,866

Note: Metric tons are as converted from pounds and may not necessarily total due to rounding.

The Winter I possession limit will be reduced to 1,000 lb (454 kg) when 80 percent of that period's allocation has been landed. The Winter II possession limit may be adjusted (in association with a transfer of unused Winter I quota to the Winter II period) via notification in the **Federal Register**.

TABLE 6—INITIAL COMMERCIAL SCUP POSSESSION LIMITS BY QUOTA PERIOD

Quota period	Percent share	Federal possession limits (per trip)	
		lb	kg
Winter I	45.11	50,000	22,680
Summer	38.95	N/A	N/A
Winter II	15.94	12,000	5,443
Total	100.0	N/A	N/A

Black Sea Bass

This rule proposes the Council's revised ABC recommendation and the commercial and recreational catch limits associated with that ABC for fishing years 2016 and 2017.

Black sea bass remains a data-poor stock, with relatively high uncertainty for the purposes of calculating ABC. The SSC rejected the OFL estimate provided from the 2011 stock assessment, stating that it was highly uncertain and not sufficiently reliable to use as the basis of management advice. In 2012, the SSC recommended an ABC of 4.50 million lb (2,041 mt). The Council tasked the SSC to revisit this recommendation in January 2013. The SSC revised its recommendation for fishing years 2013 and 2014 and recommended an ABC of 5.50 million lb (2,494 mt). This ABC and the corresponding specifications were implemented in June 2013 and were carried forward into fishing year 2015. At the July 2015 meeting, the SSC made an interim recommendation that would continue this ABC into fishing years 2016–2017. No recommendation was made for 2018. A benchmark stock assessment for black sea bass is scheduled to occur in 2016 and the Council and the SSC will use this information to recommend a 2018 ABC.

A very large year class from 2011 has been prevalent throughout the fishery for the past several years, making it difficult to avoid black sea bass and leading to increasingly restrictive management measures. The SSC reviewed additional information at its September 16, 2015, meeting on setting catch recommendations for data poor stocks with no reliable overfishing limit estimate available (*i.e.,* ABC Control Rule Level IV). This is intended to replace the default constant catch approach the SSC has used for data-poor stocks. The SSC determined that the average of four of the Data-Limited Modeling Approaches that were evaluated was a more scientifically robust approach to setting catch advice. This approach resulted in the SSC revising its black sea bass ABC recommendation for 2016 and 2017 to 6.67 million lb (3,024 mt). The Council discussed the revised SSC recommendation at its October 7, 2015, meeting, notifying NMFS in a letter dated October 14, 2015. The Commission's Black Sea Bass Board will review this recommendation in November.

The Black Sea Bass Monitoring Committee met in July 2015 to discuss the SSC's interim recommendation and to determine if additional reductions in the catch limits were necessary to account for management uncertainty. The Monitoring Committee determined that no additional reductions to account for management uncertainty were necessary because the commercial management program is timely, and management uncertainty will be more explicitly accounted for in the recreational management measures process. Therefore, it was recommended that the ACTs (both commercial and recreational) should be set equal to their respective ACL for fishing years 2016 and 2017. The Monitoring Committee discussed the revised ABC recommendation via email prior to the Council's discussion. The Monitoring Committee determined that the rationale for the prior recommendation was also applicable to the revised specifications. As such, the Council is recommending, and this rule proposes, that the ACT be set equal to the ACL for both sectors in both years.

The Council recommended that all other commercial management measures remain at the status quo. This rule proposes the revised specifications shown in Table 7, as recommended by the Council and consistent with the SSC's recommendations. Preliminary data indicate that a commercial quota overage occurred in 2014. There may also have been more discards than projected, resulting in an additional overage of the ACL, potentially triggering an additional accountability measure. Any overage of the ACL beyond the landings overage will be deducted from the 2016 ACT. The 2014 commercial quota overage amount, in pounds, will be deducted from the 2016 quota when the final accounting is completed. Commercial overages applicable to fishing year 2017 will be provided in a **Federal Register** notice prior to the start of the fishing year.

TABLE 7—PROPOSED BLACK SEA BASS 2016–2017 SPECIFICATIONS

	2015 (current)		2016 and 2017	
	million lb	mt	million lb	mt
ABC	5.50	2,494	6.67	3,024
ABC Landings Portion	4.56	2,070	5.53	2,510
ABC Discards Portion	0.93	424	1.13	514
Commercial ACL	2.60	1,180	3.15	1,428
Commercial ACT	2.58	1,170	3.15	1,428
Projected Commercial Discards	0.37	166	0.44	198
Commercial Quota	2.21	1,004	2.71	1,230
Recreational ACL	2.90	1,314	3.52	1,597
Recreational ACT	2.90	1,314	3.52	1,597
Projected Recreational Discards	0.57	258	0.70	317
Recreational Harvest Limit	2.33	1,056	2.82	1,280

Note: An accountability measure was implemented for fishing year 2015 because of a prior year's commercial fishery overage.

Classification

Pursuant to section 304(b)(1)(A) of the Magnuson-Stevens Act, the NMFS Assistant Administrator has determined that this proposed rule is consistent with the Summer Flounder, Scup, and Black Sea Bass FMP, other provisions of the Magnuson-Stevens Act, and other applicable law, subject to further consideration after public comment.

These proposed specifications are exempt from review under Executive Order 12866.

An IRFA was prepared by the Council, as required by section 603 of the Regulatory Flexibility Act (RFA), to examine the impacts of these proposed specifications on small business entities, if adopted. A description of the specifications, why they are being considered, and the legal basis for proposing and implementing specifications for the summer flounder, scup, and black sea bass fisheries are contained in the preamble to this proposed rule. A copy of the detailed RFA analysis is available from NMFS or the Council (see **ADDRESSES**). The Council's analysis made use of quantitative approaches when possible. Where quantitative data on revenues or other business-related metrics that would provide insight to potential impacts were not available to inform the analyses, qualitative analyses were conducted. A summary of the 2016–2018 specifications RFA analysis follows.

Description of the Reasons Why Action by the Agency is Being Considered, and a Statement of the Objectives of, and Legal Basis for, This Proposed Rule

This action proposes management measures, including annual catch limits, for the summer flounder, scup, and black sea bass fisheries in order to prevent overfishing and achieve optimum yield in the fishery. A complete description of the action, why it is being considered, and the legal basis for this action are contained in the specifications document, and elsewhere in the preamble to this proposed rule, and are not repeated here.

Description and Estimate of the Number of Small Entities to Which the Proposed Rule Would Apply

The Small Business Administration defines a small business as one that is independently owned and operated; not dominant in its field of operation; has annual receipts that do not exceed $20.5 million in the case of commercial finfish harvesting entities (NAIC 114111), $5.5 million in the case of commercial shellfish harvesting entities (NAIC 114112), $7.5 million in the case of for-hire fishing entities (NAIC 114119); or has fewer than 500 employees in the case of fish processors or 100 employees in the case of fish dealers. The North American Industry Classification System (NAICS) is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.

This proposed rule affects commercial and recreational fish harvesting entities engaged in the summer flounder, scup, and black sea bass fisheries. Individually-permitted vessels may hold permits for several fisheries, harvesting species of fish that are regulated by several different FMPs, even beyond those impacted by the proposed action. Furthermore, multiple-permitted vessels and/or permits may be owned by entities affiliated by stock ownership, common management, identity of interest, contractual relationships, or economic dependency. For the purposes of the RFA analysis, the ownership entities, not the individual vessels, are considered to be the regulated entities.

Ownership entities are defined as those entities with common ownership personnel as listed on the permit application. Only permits with identical ownership personnel are categorized as an ownership entity. For example, if five permits have the same seven persons listed as co-owners on their permit applications, those seven persons would form one ownership entity that holds those five permits. If two of those seven owners also co-own additional vessels, that ownership arrangement would be considered a separate ownership entity for the purpose of this analysis.

In preparation for this action, ownership entities are identified based on a list of all permits for the most recent complete calendar year. The current ownership data set used for this analysis is based on calendar year 2014 and contains average gross sales associated with those permits for calendar years 2012 through 2014. In addition to classifying a business (ownership entity) as small or large, a business can also be classified by its primary source of revenue. A business is defined as being primarily engaged in fishing for finfish if it obtains greater than 50 percent of its gross sales from sales of finfish. Similarly, a business is defined as being primarily engaged in fishing for shellfish if it obtains greater than 50 percent of its gross sales from sales of shellfish.

A description of the specific permits that are likely to be impacted by this action is provided below, along with a discussion of the impacted businesses, which can include multiple vessels and/or permit types.

The ownership database shows that for the 2012–2014 period, 485 affiliate firms held a summer flounder commercial permit and 547 affiliate firms held a summer flounder party/charter permit; 446 affiliate firms held a scup commercial permit and 491 affiliate firms held a scup party/charter permit; and 491 affiliate firms held a black sea bass commercial permit and 533 affiliate firms held a black sea bass party/charter permit. However, not all of those affiliate firms are active participants in the fishery. According to the ownership database, 960 affiliate firms landed summer flounder, scup, and/or black sea bass during the 2012–2014 period, with 952 of those business affiliates categorized as small business and 8 categorized as large business.

Description of the Projected Reporting, Record-Keeping, and Other Compliance Requirements of This Proposed Rule

There are no new reporting or recordkeeping requirements contained in any of the alternatives considered for this action.

Federal Rules Which May Duplicate, Overlap, or Conflict With This Proposed Rule

NMFS is not aware of any relevant Federal rules that may duplicate, overlap, or conflict with this proposed rule.

Description of Significant Alternatives to the Proposed Action Which Accomplish the Stated Objectives of Applicable Statutes and Which Minimize Any Significant Economic Impact on Small Entities

The Council analyzed four sets of combined catch limit alternatives for each of the fishing years 2016–2018 for the summer flounder, scup, and black sea bass fisheries. The 2018 fishing year analysis is based on summer flounder and scup only because there was no recommendation for black sea bass. The alternatives were as follows:

• Alternative 1 was the Council's originally preferred alternative, and was consistent with the SSC's interim advice;

• Alternative 2 is the status quo and would maintain the current specifications in effect;

• Alternative 3 is an alternative provided for analytical purposes as the ''most restrictive'' set of landings limits, based on the lowest landings limits in the time series for each stock; and

• Alternative 4 is the counter-point to Alternative 3 as the ''least restrictive'' or highest landings limits in the time series.

This analysis was completed using the Council's interim recommendation for the black sea bass specifications. The specifications proposed in this action are different than Alternative 1, as described in the Council's specifications document and IRFA. The proposed specifications represent an increase in the 2016 and 2017 commercial quotas to 2.71 million lb (1,230 mt) and recreational harvest limits of 2.82 million lb (1,280 mt). These are 21 percent higher than the previously preferred alternative (Alternative 1), and 33 percent lower than the ''least restrictive'' alternative (Alternative 4). The impacts from the proposed catch limits fall within the range that has been analyzed and are more fully described here. The discussion below is based on the conclusions of the RFA analyses in the draft specifications document provided by the Council, modified to account for the revised black sea bass recommendation.

TABLE 8—SUMMARY OF LANDINGS LIMITS BY ALTERNATIVE

Year	Alternative	Species	Commercial quota	Recreational harvest limit
2016	Proposed	Summer Flounder	8.12	5.42
		Scup	20.47	6.09
		Black Sea Bass	2.71	2.82
	Alternative 1 (Preferred)	Summer Flounder	8.12	5.42
		Scup	20.47	6.09
		Black Sea Bass	2.24	2.33
	Alternative 2 (Status quo)	Summer Flounder	11.07	7.38
		Scup	21.23	6.80
		Black Sea Bass	2.21	2.33
	Alternative 3 (Most Restrictive)	Summer Flounder	6.30	4.20
		Scup	2.53	1.24
		Black Sea Bass	1.13	1.17
	Alternative 4 (Least Restrictive)	Summer Flounder	18.18	12.12
		Scup	28.35	8.57
		Black Sea Bass	4.02	4.18
2017	Proposed	Summer Flounder	7.91	5.28
		Scup	18.38	5.50
		Black Sea Bass	2.71	2.82

TABLE 8—SUMMARY OF LANDINGS LIMITS BY ALTERNATIVE—Continued

Year	Alternative	Species	Commercial quota	Recreational harvest limit
	Alternative 1 (Preferred)	Summer Flounder	7.91	5.28
		Scup	18.38	5.50
		Black Sea Bass	2.24	2.33
	Alternative 2 (Status quo)	Summer Flounder	11.07	7.38
		Scup	21.23	6.80
		Black Sea Bass	2.21	2.33
	Alternative 3 (Most Restrictive)	Summer Flounder	6.30	4.20
		Scup	2.53	1.24
		Black Sea Bass	1.13	1.17
	Alternative 4 (Least Restrictive)	Summer Flounder	18.18	12.12
		Scup	28.35	8.57
		Black Sea Bass	4.02	4.18
2018	Alternative 1 (Preferred; Proposed)	Summer Flounder	7.89	5.26
		Scup	17.34	5.21
	Alternative 2 (Status quo)	Summer Flounder	11.07	7.38
		Scup	21.23	6.80
	Alternative 3 (Most Restrictive)	Summer Flounder	6.30	4.20
		Scup	2.53	1.24
	Alternative 4 (Least Restrictive)	Summer Flounder	18.18	12.12
		Scup	28.35	8.57

Commercial Fishery Impacts

It is expected that varying levels of negative economic impacts on the three fisheries may occur from the proposed specifications. The summer flounder fishery is expected to experience the largest negative impact, because of the 20-percent decrease in available quota in 2016. This represents an approximately $8.1-million decrease in ex-vessel summer flounder revenue across the fleet. However, some of this impact may be offset for some firms if the price of summer flounder increases because of lower availability. This decrease is not distributed uniformly across each participating vessel because each business is not equally dependent on summer flounder. The Council's analysis shows that 228 out of the 952 small business entities are likely to be faced with revenue reductions of 5 percent or more because of Alternative 1. Of these, 40 percent had gross sales of $10,000 or less, suggesting dependence on fishing for some of these firms is very small. If the revenue impacts were distributed equally across the active firms (*i.e.,* those business entities who vessel or vessels landed summer flounder between 2012 and 2014), the proposed specifications would result in a $11,877-decrease per firm in 2016 compared to 2015.

The 2016–2018 proposed scup commercial quotas and recreational harvest limits under the proposed alternative are lower than the quotas implemented in 2015; however, they are higher than the 2014 commercial and recreational landings. Unless market conditions change substantially in coming years, it is expected that commercial and recreational landings will likely be close to the 2014 landings. There is no indication that the market environment for commercially and recreationally caught scup will change considerably in fishing years 2016–2018. Therefore, there are no expected negative impacts from the proposed scup quotas, even though they are lower than those of the previous year.

The 2016–2017 proposed black sea bass commercial quotas are increases from 2015. Relative to the status quo catch levels, the proposed black sea bass quotas could result in slightly positive impacts for the commercial fishery. The status quo specifications would result in a $0.1-million increase, in revenue, fleet-wide, for the commercial black sea bass fishery, or $134 per business entity if distributed equally. The least restrictive alternative (Alternative 4) would result in a $5.9-million increase in revenues ($7,930 per business entity, if distributed equally). The proposed commercial quota is approximately 13 percent higher than 2014 landings. Assuming the 2014 ex-vessel price for black sea bass ($3.24/lb), the proposed commercial quota represents a potential increase of $1.5 million in fleet-wide revenues, or approximately $2,000 per business entity if distributed equally. The proposed alternative has slightly more positive economic impacts than the status quo catch limits and is consistent with the SSC's revised recommendation.

Recreational Fishery Impacts

While the proposed specifications would establish recreational harvest limits for summer flounder, scup, and black sea bass, the management measure details for recreational fisheries will be developed by the Council separately for each fishing year, followed by NMFS rulemaking in the spring of that year. A comprehensive analysis of the impacts associated with the recommended recreational management measures will be provided to NMFS from the Council to support these activities. If recreational landings for these three species are the same in 2016–2018 as in recent years, the recreational harvest limits proposed would likely constrain recreational landings for summer flounder and black sea bass, but not likely for scup. As such, it is likely that more restrictive limits (*i.e.,* lower possession limits, higher minimum size limits, and/or shorter open seasons) will be required for summer flounder and black sea bass. This will likely have some negative economic impacts, particularly for the summer flounder fishery. Increasing the recreational harvest limit for black sea bass would allow the measures to be restricted less than if the status quo recreational harvest limit is maintained, although only slightly. Specific recreational management measures (for all three species) will be determined when more complete data regarding recreational landings are available.

Summary

The Council selected Alternative 1 (preferred) over Alternative 2 (status quo), Alternative 3 (most restrictive), and Alternative 4 (least restrictive) stating that the Alternative 1 measures were consistent with the advice provided to the Council by its SSC and monitoring committees and would have less negative economic impacts than the most restrictive alternatives. The status quo and least restrictive alternatives (Alternatives 2 and 4, respectively) would have less economic impact than the preferred alternative, but not satisfy the Magnuson-Stevens Act requirements to ensure fish stocks are not subject to overfishing. NMFS agrees with the Council's IRFA analysis and rationale for recommending these catch limits. As such, NMFS is proposing to implement the Council's preferred ABCs, ACLs, ACTs, commercial quotas, and recreational harvest limits, as revised, presented in Table 1 of this proposed rule's preamble.

Authority: 16 U.S.C. 1801 *et seq.*

Dated: November 4, 2015.

Samuel D. Rauch III,

Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.

[FR Doc. 2015–28444 Filed 11–6–15; 8:45 am]

BILLING CODE 3510–22–P

Notices

Federal Register

Vol. 80, No. 216

Monday, November 9, 2015

This section of the FEDERAL REGISTER contains documents other than rules or proposed rules that are applicable to the public. Notices of hearings and investigations, committee meetings, agency decisions and rulings, delegations of authority, filing of petitions and applications and agency statements of organization and functions are examples of documents appearing in this section.

DEPARTMENT OF AGRICULTURE

Rural Business-Cooperative Service

Notice of Request for Extension of Currently Approved Information Collection

AGENCY: Rural Business-Cooperative Service, USDA.

ACTION: Proposed collection; comments requested.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995, this notice announces the Rural Business-Cooperative Service's (RBS) intention to request an extension for a currently approved information collection in support of the program for 7 CFR part 4284, subpart K, Agriculture Innovation Demonstration Centers.

DATES: Comments on this notice must be received by January 8, 2016 to be considered.

FOR FURTHER INFORMATION CONTACT: Chad Parker, Deputy Administrator, Cooperative Programs, Rural Development, U.S. Department of Agriculture, STOP 3250, Room 5813–South, 1400 Independence Avenue SW., Washington, DC 20250–3250. Telephone: (202) 720–7558, Email: *chad.parker@wdc.usda.gov*.

SUPPLEMENTARY INFORMATION:

Title: Agriculture Innovation Centers.

OMB Number: 0570–0045.

Expiration Date of Approval: March 31, 2016.

Type of Request: Extension of currently approved information collection.

Abstract: Agriculture Innovation Center applicants must provide required information to demonstrate eligibility for the program and compliance with applicable laws and regulations. Grantees are required to provide progress reports for the duration of the grant agreement to ensure continued compliance and to measure the success of the program.

Estimate of Burden: Public reporting burden for this collection is estimated to average 4.38 hours per response.

Estimated Number of Respondents: 1.

Estimated Number of Responses per Respondent: 13.

Estimated Number of Responses: 13.

Estimated Total Annual Burden on Respondents: 57 hours.

Copies of this information collection can be obtained from Jeanne Jacobs, Regulations and Paperwork Management Branch, (202) 692–0040.

Comments

Comments are invited on: (a) Whether the proposed collection of information is necessary for the proper performance of the functions of RBS, including whether the information will have practical utility; (b) the accuracy of the Agency's estimate of the burden to collect the required information, including the validity of the strategy used; (c) ways to enhance the quality, utility, and clarity of the information to be collected; and (d) ways to minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology. Comments on the paperwork burden may be sent to Jeanne Jacobs, Regulations and Paperwork Management Branch, Rural Development, U.S. Department of Agriculture, STOP 0742, 1400 Independence Avenue SW., Washington, DC 20250–0742. All responses to this notice will be summarized and included in the request for the Office of Management and Budget's approval. All comments will become a matter of public record.

Dated: October 23, 2015.

Samuel H. Rikkers,

Acting Administrator, Rural Business-Cooperative Service.

[FR Doc. 2015–28443 Filed 11–6–15; 8:45 am]

BILLING CODE 3410–XY–P

DEPARTMENT OF COMMERCE

Submission for OMB Review; Comment Request

The Department of Commerce will submit to the Office of Management and Budget (OMB) for clearance the following proposal for collection of information under the provisions of the Paperwork Reduction Act (44 U.S.C. chapter 35).

Agency: National Institute of Standards and Technology (NIST).

Title: Baldrige Executive Fellows Program.

OMB Control Number: None.

Form Number(s): None.

Type of Request: New collection.

Number of Respondents: 12.

Average Hours per Response: 1 hour.

Burden Hours: 12.

Needs and Uses: Collection needed to obtain information to select applicants for the Baldrige Executive Fellows Program.

Affected Public: Business, health care, education, or other for-profit organizations; health care, education, and other nonprofit organizations; and individuals.

Frequency: Annual.

Respondent's Obligation: Voluntary.

This information collection request may be viewed at reginfo.gov. Follow the instructions to view Department of Commerce collections currently under review by OMB.

Written comments and recommendations for the proposed information collection should be sent within 30 days of publication of this notice to *OIRA_Submission@omb.eop.gov* or fax to (202) 395–5806.

Dated: November 4, 2015.

Glenna Mickelson,

Management Analyst, Office of the Chief Information Officer.

[FR Doc. 2015–28410 Filed 11–6–15; 8:45 am]

BILLING CODE 3510–13–P

DEPARTMENT OF COMMERCE

Submission for OMB Review; Comment Request

The Department of Commerce will submit to the Office of Management and Budget (OMB) for clearance the following proposal for collection of information under the provisions of the Paperwork Reduction Act (44 U.S.C. chapter 35).

Agency: U.S. Census Bureau.

Title: 2016 Census Test.

OMB Control Number: 0607–XXXX.

Form Number(s):

Questionnaire

DF–1(ES)

DF–1(EC)
DF–1(EK)

Instruction Card

DF–33(ES)
DF–33(EC)
DF–33(EK)

Questionnaire Cover Letters

DF–16(L2)(ES)
DF–16(L2)(EC)
DF–16(L2)(EK)
DF–16(L4)(ES)
DF–16(L4)(EC)
DF–16(L4)(EK)
DF–17(L2)(ES)
DF–17(L2)(EC)
DF–17(L2)(EK)

Postcards/Reminder Letter

DF–9L(ES)
DF–9B(ES)
DF–9B(EC)
DF–9B(EK)
DF–9(2B)(ES)
DF–9(2B)(EC)
DF–9(2B)(EK)
DF–9C(ES)
DF–9C(EC)
DF–9C(EK)
DF–9(2C)(ES)
DF–9(2C)(EC)
DF–9(2C)(EK)
DF–9(AR)(1)

Languages Brochures

DF–12
DF–14

Information Insert

DF–17(TQA)
DF–17I(ES)
DF–17I(EC)
DF–17I(EK)

Envelopes

DF–6A(1)(IN)(ES)
DF–6A(IN)(ES)
DF–6U(IN)
DF–6U(1)(IN)
DF–8A(ES)
DF–8A(EC)
DF–8A(EK)
DF–5(ES)

Field Materials

DF–26B
DF–28(ES)
DF–28(EC)
DF–28(EK)

Internet Instrument Spec

COMPASS (NRFU/QA RI) Spec

Reinterview Instrument Spec (Coverage)

Type of Request: New Collection.
Number of Respondents: 412,348.
Average Hours per Response: 0.2.
Burden Hours: 68,954.
Estimated burden hours for 2016 Census Test:

Type of respondent/operation	Estimated number of respondents	Estimated time per response (minutes)	Estimated total annual burden hours
Self Response	250,000	10	41,667
NRFU	120,000	10	20,000
NRFU Quality Control Reinterview	12,000	10	2,000
Non-ID Manual Processing—phone followup	400	5	33
Coverage Reinterview	24,500	10	4,084
Non-ID Response Validation	5,000	10	834
Focus Group Selection Contacts	288	3	15
Focus Group Participants	160	120	320
Totals	412,348		68,954

Needs and Uses: During the years preceding the 2020 Census, the Census Bureau is pursuing its commitment to reduce the cost of conducting the census while maintaining the quality of the results. A primary decennial census cost driver is the collection of data in person from addresses for which the Census Bureau received no reply via initially offered response options. We refer to these as nonresponse cases, and the efforts we make to collect data from these cases as the Nonresponse Followup, or NRFU, operation.

The 2016 Census Test will allow the Census Bureau to build upon past tests, to refine our plans and methods associated with the reengineered field operations for the NRFU operation of the Census. Namely, this test will allow us to:

- Test refinements to the ratios of field enumerators to field supervisors.
- Test refinements to our enhanced operational control system, including the way we assign work to field staff, and how those assignments are routed.
- Test alternatives to government furnished equipment for data collection, such as enumerator use of personally owned devices (sometimes known as Bring Your Own Device, or BYOD), or devices provided by a private company as part of a contract for wireless service (sometimes known as Device As A Service).
- Test refinements to our use of administrative records to reduce the NRFU workload.
- Test new methods of conducting NRFU quality control reinterviews.

Increasing the number of people who take advantage of self response options (such as responding online, completing a paper questionnaire and mailing it back to the Census Bureau, or responding via telephone) can contribute to a less costly census. The Census Bureau has committed to using the Internet as a primary response option in the 2020 Census, and we are studying ways to offer and promote this option to respondents. In addition to increasing and optimizing self response through the Internet, the Census Bureau plans to test the impacts of providing additional materials to respondents as part of their first mailing along with a letter invitation. One example of additional material is an insert to be included for traditionally hard-to-count populations. We will also test a tailored envelope treatment to determine whether this represents an effective way to encourage and support self response for respondents who speak languages other than English. We also will continue to study the option of allowing people to respond on the Internet without having or using a unique identification code previously supplied by the Census Bureau. Each of these will be discussed in more detail in subsequent sections of this supporting statement.

2016 Census Test—Los Angeles County (Part), California and Harris County (Part), Texas

The areas within Los Angeles County (part), California and Harris County (part), Texas were chosen based on a variety of characteristics—including language diversity, demographic diversity, varying levels of Internet usage, large metropolitan areas and high vacancy rates. These characteristics can help the Census Bureau refine its operational plans for the 2020 Census by testing operational procedures on traditionally hard-to-count populations. The tests will allow for our continued development of providing additional ways for the population to respond to the once-a-decade census, as well as more cost-effective ways for census takers to follow up with households that fail to respond.

Los Angeles County (part), California, places and census designated places (CDP)
Alhambra city
Los Angeles city
Montebello city
Monterey Park city
Pasadena city
Rosemead city
San Gabriel city
San Marino city
South El Monte city
South Pasadena city
Temple City city
East Los Angeles CDP
East Pasadena CDP
East San Gabriel CDP
San Pasqual CDP
South San Gabriel CDP

Harris County (part), Texas, places
Bunker Hill Village city
Hedwig Village city
Hilshire Village city
Houston city
Hunters Creek Village city
Jersey Village city
Piney Point Village city
Spring Valley Village city

To increase Internet self response rates, the Census Bureau will improve contact and notification strategies that were studied in prior testing. The core of our contact strategy is an Internet-push strategy, which was previously tested in the 2012 National Census Test, 2014 Census Test and the 2015 Optimizing Self Response and Census Tests and is now being further refined. We also introduced a supplemental contact strategy in the 2015 National Content Test, the Internet Choice panel, which we will continue to study in the 2016 Census Test. In the 2016 Census Test, improvements to this approach will be tested by modifying the content of our messages, including materials in the mailing packages.

We also will continue our efforts to make it easier for respondents by allowing them to respond without providing a pre-assigned identification (ID) number associated with their address. This response option, referred to as ''Non-ID,'' was successfully implemented on the Internet in the 2014 and 2015 Census Tests. In this test, we will continue to develop the infrastructure to deploy real-time processing of Non-ID responses. Specifically, we will implement automated processing of Non-ID responses in a cloud-based environment instead of using Census Bureau hardware. This work will help us prepare for conducting Non-ID Processing at the scale we anticipate for 2020. In addition, we will be conducting a manual matching and geocoding operation for Non-ID responses that could not be matched to a record in the Census address list, or assigned to a census block during automated processing. Some of this processing will require Census staff to call respondents to obtain further information, such as missing address items that could help us obtain a match to a record in the Census address list. In some cases, we may also ask for the respondent's assistance in accurately locating their living quarters on a map so that we can associate the response to the correct census block, which is required for data tabulation.

The 2016 Census Test will be comprised of four phases: Self Response, NRFU (with a reinterview component), Coverage Reinterview, and focus groups.

Self Response

We will implement an ''Internet Push'' contact strategy, which involves first sending a letter inviting people to respond via the Internet; then sending up to two postcard reminders to non-responding addresses; and ultimately sending a paper questionnaire to addresses that still have not responded. The Census Bureau will directly contact up to 250,000 addresses in each site to request self response via one of the available response modes (Internet, telephone, paper). Materials included in the mailing explain the test and provide information on how to respond. The impact of message content on self response will be tested by varying the content of the mailing packages in the ''Internet Push'' for different panels. Specifically, we will test language that addresses how participation in the Census benefits respondents' communities and cite the mandatory nature of the census. Mail panels targeting limited English proficiency (LEP) households will include a language insert as part of the contact strategy. LEP households represent a subsample of housing units in each test location. We also plan to include the Census Internet Uniform Resource Locator (URL) on envelopes with messaging in multiple languages for a panel of housing units. This is intended to serve as a prompt for LEP respondents to access the Census URL without needing to read a letter written in a language in which they are not fluent. An ''Internet Choice'' panel will also be tested; which involves first sending a questionnaire with a letter inviting people to respond via the Internet or by using the questionnaire; then sending up to two postcard reminders to non-responding addresses; and ultimately sending a second paper questionnaire to addresses that still have not responded. The design of the mail panels is fully described in Supporting Statement B.

In addition to supporting Non-ID self response and conducting manual processing of Non-ID returns when required, we will take steps to identify duplicate or potentially fraudulent Non-ID responses. For all Non-ID responses, we will compare response data to information contained in commercial lists and Federal administrative records maintained within the Census Bureau. This will help validate respondent-provided data as well as examine the gaps in coverage we might have in currently available administrative records datasets. Last, in order to confirm the results from the records linkage, we will conduct a Response Validation operation to recollect the response data for an estimated sample of 5,000 of the Non-ID returns. This will likely be performed as a combination of telephone interviews and in-person visits, but the proportions of each of these are still to be determined.

Telephone questionnaire assistance will be available to all respondents. In addition, on-line respondents will be provided with pre-defined ''Help'' screens or ''Frequently Asked Questions'' accessible through the Internet instrument. People who prefer not to respond via a paper form or on the Internet can also call the telephone questionnaire assistance number and speak to an agent to complete the questionnaire for their household.

Content Tests Objectives in Self Response and Nonresponse Followup Data Collection

The 2016 Census Test questionnaire will include questions on housing tenure, household roster, age, sex/gender, date of birth, race and Hispanic origin, and relationship. Based on results from the 2010 Race and Hispanic Origin Alternative Questionnaire Experiment (Compton, et al. 2012 [1]), the 2016 Census Test will include a

[1] Compton, E., Bentley. M., Ennis, S., Rastogi, S., (2012), ''2010 Census Race and Hispanic Origin Alternative Questionnaire Experiment,'' DSSD 2010 CPEX Memorandum Series #B–05–R2, U.S. Census Bureau.

combined race and Hispanic origin question intended to build on what is being tested in the 2015 National Content Test. This combined question provides examples and write-in areas for each major response category, including a response category for Middle Eastern and North African ethnicities. With this combined question format no separate ''Hispanic origin'' question is used. Rather, Hispanic ethnicity or origin is measured within the single item. Respondents are asked to self-identify by selecting one or more checkboxes, and to write-in a specific origin for each checkbox selected. The 2016 Census Test allows us to test responses to these questions in geographic areas with different race and Hispanic Origin concentrations from the prior test areas.

The inclusion of the combined question will also allow the Census Bureau to conduct imputation research using this combined format in a setting when there are self responses, administrative records and NRFU enumerator responses. This will allow the Census Bureau to understand imputation approaches needed for a combined question.

We also plan to test variation in terminology by comparing ''Am.'' with ''American'' in the response category ''Black or African Am.'' on the Internet instrument. This research is being undertaken to assess the impact of different wording for the racial category that collects and tabulates data for the African American, African, and Afro-Caribbean populations. This test will provide insights to how respondents identify with the race category, depending on the wording used to describe the category itself (''Black or African Am.'' vs. ''Black or African American'').

For the relationship question, we plan to include variations in question wording associated with ''non-relatives.'' We will compare responses to a relationship question with, and without, the response categories ''roomer or boarder'' and ''housemate or roommate.'' Cognitive testing has repeatedly shown that respondents do not know what the Census Bureau sees as the differences between these categories.

The 2016 Census Test will continue to include the response categories recommended by the OMB Interagency Working Group (see section 11 of this document—Justification for Sensitive Questions) for opposite-sex and same-sex husband/wife/spouse households, and for the category for unmarried partner.

The 2016 Census Test will include a question on the Internet instrument that will allow respondents to report that a housing unit they own is vacant as of Census Day, and to provide the reason for the vacancy status (*e.g.*, a seasonal or rental unit). Collecting these data from respondents may allow the Census Bureau to identify some vacant housing units during self response so they can be removed from NRFU operations.

The Census Bureau's research on how best to present and explain the residence rule (who to count) in specific situations will continue. The Internet data collection instrument will include various ways to ask about and confirm the number of persons residing at an address. Respondents will see one of three screens about the enumeration of people in their household: one that displays the Census Bureau's basic residence rule, and then asks for the number of people in the household based on that rule; One that asks for the number of people who live in the household but provides our residence rule definition in the help text; and one that asks if any other people live at the household, with the residence rule in the help text. After the names of the roster members are collected, the respondent will then see one of three series of undercount detection questions: One series asks for additional people on two separate screens, another series asks for additional people on only one screen, or no undercount questions at all. After the demographic items are collected, the respondent will then see overcount detection questions or, if the case had not received undercount questions, no overcount detection questions.

The materials mailed to the respondents will inform them that the survey is mandatory in accordance with title 13, United States Code, sections 141 and 193. This information also will be available via a hyperlink from within the Internet instrument.

Nonresponse Followup (NRFU) Operation Testing

The 2016 Census Test will determine our 2020 Census methods for conducting NRFU operations that will increase efficiency and reduce costs. Based on previous tests, the Census Bureau will refine its contact strategies and methods for field data collection, case assignment management, and field staff administrative functions. This will include further testing of how administrative records can be used to reduce the NRFU workload.

As part of the 2016 Census Test, we will collect housing unit status and enumerate the occupants of households that do not respond to the self response phase of the census using automated enumeration software on standard (iOS and Android operating system) smartphone devices. The test will enable our continued study of options for alternatives to using government furnished equipment. This includes options for an enumerator to use their own smartphone for enumeration, often known as ''Bring Your Own Device (BYOD)'', and options to use a 'Device as a Service' contract, where the Census Bureau will not own the smartphone devices outright, but instead will pay a vendor for their use, including any initialization and setup processes required. This has the potential to mitigate risks to the operation. For example, unpredictable increases in costs associated with device initialization and hardware support. We will also continue to operationally test the field data collection application we use on these devices. The devices will use a modified version of the software used in the 2015 Census Test, with updated capabilities for handling special non-interview cases (such as demolished homes and non-existent addresses), better handling of addresses with multiple units (like apartment buildings), a clearer path for enumerators to take when attempting to collect data from a householder's neighbor or another knowledgeable source, new screens related to detecting potential ''overcount'' in a household (scenarios where current household residents also lived at another location, like student housing), and numerous other minor incremental user interface and performance updates.

The Census Bureau also plans to test a newly redesigned portion of our quality assurance activities—the NRFU Reinterview program (NRFU-RI). We plan to test:

- New methodologies for selecting cases to be reinterviewed, including the potential use of operational control system data (paradata) and administrative records to detect potential falsification by enumerators
- Using our automated field data collection instrument for conducting these reinterviews
- Using our recently re-designed operational control system to optimize the routing and assignment of reinterview cases, and
- Using the same field staff to conduct both NRFU interviews and associated reinterviews, with an explicit rule within the instrument that an enumerator is not allowed to reinterview their own work.

All of these changes have the potential to lead to a more cost-effective, streamlined, and higher quality NRFU operation for the 2020 Census. We will continue to test our newly re-engineered field infrastructure, allowing us to refine our requirements for staffing ratios and position duties for 2020 Census operations. We will also continue to test our enhanced operational control system, using lessons learned from the 2015 Census Test to make further improvements to how assignments are made and routed. We will continue to test improvements to our use of systematic alerts that will quickly notify field supervisors of potential problem enumerators, detect possible falsification, and improve both quality and efficiency for the NRFU operation.

Additionally, we will continue to test our implementation of an 'adaptive design' contact strategy: Using a varied number of personal visit attempts by geographic area based on criteria associated with people who are harder to count. We also will study when is the optimal point to discontinue attempts to collect information from each non-responding household, and instead move to attempting to collect information from a householder's neighbor or another knowledgeable source.

Finally, we will build upon work from the 2013, 2014, and 2015 Census Tests in a continued attempt to refine and evaluate our use of administrative records (including government and third-party data sources) to reduce the NRFU workload. Cases will be removed from the NRFU operation based on our administrative records modeling as follows:

- Any case that is given a status of vacant from our administrative records modeling will be immediately removed from the NRFU workload; and
- Any case that is given a status of occupied from our administrative records modeling will be removed from the NRFU workload after one unsuccessful attempt at field enumeration is made (as long as good administrative records exist for that case).

Unlike previous tests, for all cases removed from the NRFU workload in this way, we will test mailing these addresses a supplemental letter to prompt a self response. If these cases do not self-respond, we will enumerate the unit based on the results of our administrative records modeling.

For a sample of the cases that would be removed via this criteria, we will continue to perform the field followup activities. This will allow us to compare the outcomes of those that get a completed interview with our modeled status of the household, and determine the quality of our administrative record modeling.

Coverage Reinterview

As described previously, the 2016 Census Test Internet instrument contains embedded coverage experiments, and a reinterview is needed to quantify the effects of each particular version on the roster provided by the Internet respondent. The quality of the final household roster created from the panels with experimentally applied questions will be evaluated by a coverage reinterview conducted by telephone. Note that these panels are used to evaluate the different residence rule approaches used in the different questionnaire panels. The reinterview will contain extensive questions about potentially missed roster members and other places that any household members sometimes stay. Specifically, the reinterview will re-contact responders to determine if any people may have been left off the roster or erroneously included on the roster during the initial response. If there are indications during the reinterview that some people may have been left off the roster, then we will ask for demographic information about the missed people. If there are indications during the reinterview that some people may have been erroneously included, then we will ask for information about stay durations in order to resolve residency situations. The reinterview will be a Computer Assisted Telephone Interviewing (CATI) operation conducted in the Census Bureau's call centers.

In addition to contacting Internet responders, a small portion of people who responded by paper or as a part of NRFU will be selected for the Coverage Reinterview. The inclusion of such cases will allow us to quantify the quality of household rosters collected in these two other modes.

Focus Groups

Following the end of data collection, the Census Bureau will conduct focus groups with 2016 Census Test participants to ask about their experience. Topics will include their opinions on the use of administrative records by the Census Bureau. Participants also will be asked about their general concerns with government data collection and the government's ability to protect confidential data. The specific information collection materials for those activities will be submitted separately as non-substantive changes.

Testing in 2016 is necessary to build on the findings from prior testing and to establish recommendations for contact strategies, response options, and field operation efficiencies that can be further refined and deployed again in subsequent operational and system development activities. At this point in the decade, the Census Bureau needs to solidify evidence showing whether the strategies being tested can reduce the cost per housing unit during a decennial census, while still providing high quality and accuracy of the census data. The results of the 2016 Census Test from both sites will inform decisions that the Census Bureau will make about refining the detailed operational plan for the 2020 Census and will help guide the evaluation of additional 2020 Census test results later this decade.

Along with other results related to content, the response rates to paper and Internet collection will be used to help inform 2020 Census program planning and cost estimates. Several versions of some of the demographic questions and versions of coverage questions are included in this test in order to determine further the best questions and procedures for collecting the data from hard-to-count populations and achieve optimal within-household person coverage within the decennial census.

Testing enhancements to Non-ID processing will inform final planning for the 2020 Census design, as well as the infrastructure required to support large scale, real-time processing of electronic Non-ID response data submitted via the Internet. Building upon previous Census Tests, the NRFU portion of the 2016 Census Test will inform the following important decisions for conducting the 2020 Census:

- We will continue to research the cost and quality impact of reducing the NRFU caseload through the use of administrative records information, to inform our final strategy for the use of administrative records. This test will also allow us to further define our core set of administrative records that will be used for the 2020 Census, and our strategies for acquiring and using those records. This research will help us achieve our goal of a more cost-effective 2020 Census, while maintaining quality of the results.
- We will continue to research the cost and quality impacts of new NRFU contact strategies that make use of adaptive design and a re-engineered management structure employing automated payroll, automated training, and minimal face-to-face contact between enumerators and supervisors. Enumerators are asked to provide work-time availability in advance, and the system then will assign the optimal number of cases to attempt each day, as well as the optimal route to follow that

day. Again, this operational research will help us towards our goal of a more cost-effective 2020 Census, while maintaining quality of the results.

• We will be able to determine at what rate field staff are willing to use their own personally owned devices to conduct Census enumeration, and continue to develop our technical processes to enable this to be done in a secure and cost-effective manner. We will also be able to make quality and cost determinations about a 'Device as a Service' option, and be able to develop more mature cost models to inform our decisions related to the device provision strategies for the 2020 Census NRFU operation.

• We will be able to determine the cost and quality impacts of our newly re-engineered NRFU Reinterview quality assurance program. This data will inform our decision on an integrated and re-designed approach to quality assurance for the 2020 Census.

Affected Public: Individuals or Households.

Frequency: One time.

Respondent's Obligation: Mandatory.

Legal Authority: Title 13, United States Code, sections 141 and 193.

This information collection request may be viewed at *www.reginfo.gov*. Follow the instructions to view Department of Commerce collections currently under review by OMB.

Written comments and recommendations for the proposed information collection should be sent within 30 days of publication of this notice to *OIRA_Submission@omb.eop.gov* or fax to (202) 395–5806.

Dated: November 4, 2015.

Glenna Mickelson,

Management Analyst, Office of the Chief Information Officer.

[FR Doc. 2015–28416 Filed 11–6–15; 8:45 am]

BILLING CODE 3510–07–P

DEPARTMENT OF COMMERCE

Foreign-Trade Zones Board

[S–117–2015]

Approval of Subzone Status; Springsteen Logistics, LLC; Rock Hill and Fort Lawn, South Carolina

On August 11, 2015, the Executive Secretary of the Foreign-Trade Zones (FTZ) Board docketed an application submitted by the South Carolina State Ports Authority, grantee of FTZ 38, requesting subzone status subject to the existing activation limit of FTZ 38, on behalf of Springsteen Logistics, LLC in Rock Hill and Fort Lawn, South Carolina.

The application was processed in accordance with the FTZ Act and Regulations, including notice in the **Federal Register** inviting public comment (80 FR 49201, August 17, 2015). The FTZ staff examiner reviewed the application and determined that it meets the criteria for approval. Pursuant to the authority delegated to the FTZ Board Executive Secretary (15 CFR 400.36(f)), the application to establish Subzone 38J is approved, subject to the FTZ Act and the Board's regulations, including § 400.13, and further subject to FTZ 38's 2,000-acre activation limit.

Dated: October 30, 2015.

Andrew McGilvray,

Executive Secretary.

[FR Doc. 2015–28459 Filed 11–6–15; 8:45 am]

BILLING CODE 3510–DS–P

DEPARTMENT OF COMMERCE

Foreign-Trade Zones Board

[S–147–2015]

Foreign-Trade Zone 76—Bridgeport, Connecticut; Application for Subzone; MannKind Corporation; Danbury, Connecticut

An application has been submitted to the Foreign-Trade Zones (FTZ) Board by the Bridgeport Port Authority, grantee of FTZ 76, requesting subzone status for the facilities of MannKind Corporation, located in Danbury, Connecticut. The application was submitted pursuant to the provisions of the Foreign-Trade Zones Act, as amended (19 U.S.C. 81a–81u), and the regulations of the FTZ Board (15 CFR part 400). It was formally docketed on November 3, 2015.

The proposed subzone would consist of the following sites: *Site 1* (12.5 acres) 40 Taylor Street, Danbury; and, *Site 2* (5 acres) 1 Casper Street, Danbury. The proposed subzone would be subject to the existing activation limit of FTZ 76. A notification of proposed production activity has been submitted and will be published separately for public comment.

In accordance with the FTZ Board's regulations, Kathleen Boyce of the FTZ Staff is designated examiner to review the application and make recommendations to the Executive Secretary.

Public comment is invited from interested parties. Submissions shall be addressed to the FTZ Board's Executive Secretary at the address below. The closing period for their receipt is December 21, 2015. Rebuttal comments in response to material submitted during the foregoing period may be submitted during the subsequent 15-day period to January 4, 2016.

A copy of the application will be available for public inspection at the Office of the Executive Secretary, Foreign-Trade Zones Board, Room 21013, U.S. Department of Commerce, 1401 Constitution Avenue NW., Washington, DC 20230–0002, and in the ''Reading Room'' section of the FTZ Board's Web site, which is accessible via *www.trade.gov/ftz.*

For further information, contact Kathleen Boyce at *Kathleen.Boyce@trade.gov* or (202) 482–1346.

Dated: November 3, 2015.

Elizabeth Whiteman,

Acting Executive Secretary.

[FR Doc. 2015–28458 Filed 11–6–15; 8:45 am]

BILLING CODE 3510–DS–P

DEPARTMENT OF COMMERCE

International Trade Administration

Initiation of Antidumping and Countervailing Duty Administrative Reviews

AGENCY: Enforcement and Compliance, International Trade Administration, Department of Commerce.

SUMMARY: The Department of Commerce (''the Department'') has received requests to conduct administrative reviews of various antidumping and countervailing duty orders and findings with September anniversary dates. In accordance with the Department's regulations, we are initiating those administrative reviews.

DATES: *Effective Date:* November 9, 2015.

FOR FURTHER INFORMATION CONTACT: Brenda E. Waters, Office of AD/CVD Operations, Customs Liaison Unit, Enforcement and Compliance, International Trade Administration, U.S. Department of Commerce, 14th Street and Constitution Avenue NW., Washington, DC 20230, telephone: (202) 482–4735.

SUPPLEMENTARY INFORMATION:

Background

The Department has received timely requests, in accordance with 19 CFR 351.213(b), for administrative reviews of various antidumping and countervailing duty orders and findings with September anniversary dates.

All deadlines for the submission of various types of information, certifications, or comments or actions by the Department discussed below refer to the number of calendar days from the applicable starting time.

Notice of No Sales

If a producer or exporter named in this notice of initiation had no exports, sales, or entries during the period of review (''POR''), it must notify the Department within 30 days of publication of this notice in the **Federal Register**. All submissions must be filed electronically at *http://access.trade.gov* in accordance with 19 CFR 351.303.[1] Such submissions are subject to verification in accordance with section 782(i) of the Tariff Act of 1930, as amended (''the Act''). Further, in accordance with 19 CFR 351.303(f)(1)(i), a copy must be served on every party on the Department's service list.

Respondent Selection

In the event the Department limits the number of respondents for individual examination for administrative reviews initiated pursuant to requests made for the orders identified below, the Department intends to select respondents based on U.S. Customs and Border Protection (''CBP'') data for U.S. imports during the period of review. We intend to place the CBP data on the record within five days of publication of the initiation notice and to make our decision regarding respondent selection within 30 days of publication of the initiation **Federal Register** notice. Comments regarding the CBP data and respondent selection should be submitted seven days after the placement of the CBP data on the record of this review. Parties wishing to submit rebuttal comments should submit those comments five days after the deadline for the initial comments.

In the event the Department decides it is necessary to limit individual examination of respondents and conduct respondent selection under section 777A(c)(2) of the Act:

In general, the Department has found that determinations concerning whether particular companies should be ''collapsed'' (*i.e.,* treated as a single entity for purposes of calculating antidumping duty rates) require a substantial amount of detailed information and analysis, which often require follow-up questions and analysis. Accordingly, the Department will not conduct collapsing analyses at the respondent selection phase of this review and will not collapse companies at the respondent selection phase unless there has been a determination to collapse certain companies in a previous segment of this antidumping proceeding (*i.e.,* investigation, administrative review, new shipper review or changed circumstances review). For any company subject to this review, if the Department determined, or continued to treat, that company as collapsed with others, the Department will assume that such companies continue to operate in the same manner and will collapse them for respondent selection purposes. Otherwise, the Department will not collapse companies for purposes of respondent selection. Parties are requested to (a) identify which companies subject to review previously were collapsed, and (b) provide a citation to the proceeding in which they were collapsed. Further, if companies are requested to complete the Quantity and Value (''Q&V'') Questionnaire for purposes of respondent selection, in general each company must report volume and value data separately for itself. Parties should not include data for any other party, even if they believe they should be treated as a single entity with that other party. If a company was collapsed with another company or companies in the most recently completed segment of this proceeding where the Department considered collapsing that entity, complete Q&V data for that collapsed entity must be submitted.

Deadline for Withdrawal of Request for Administrative Review

Pursuant to 19 CFR 351.213(d)(1), a party that has requested a review may withdraw that request within 90 days of the date of publication of the notice of initiation of the requested review. The regulation provides that the Department may extend this time if it is reasonable to do so. In order to provide parties additional certainty with respect to when the Department will exercise its discretion to extend this 90-day deadline, interested parties are advised that the Department does not intend to extend the 90-day deadline unless the requestor demonstrates that an extraordinary circumstance has prevented it from submitting a timely withdrawal request. Determinations by the Department to extend the 90-day deadline will be made on a case-by-case basis.

Separate Rates

In proceedings involving non-market economy (''NME'') countries, the Department begins with a rebuttable presumption that all companies within the country are subject to government control and, thus, should be assigned a single antidumping duty deposit rate. It is the Department's policy to assign all exporters of merchandise subject to an administrative review in an NME country this single rate unless an exporter can demonstrate that it is sufficiently independent so as to be entitled to a separate rate.

To establish whether a firm is sufficiently independent from government control of its export activities to be entitled to a separate rate, the Department analyzes each entity exporting the subject merchandise under a test arising from the *Final Determination of Sales at Less Than Fair Value: Sparklers from the People's Republic of China,* 56 FR 20588 (May 6, 1991), as amplified by *Final Determination of Sales at Less Than Fair Value: Silicon Carbide from the People's Republic of China,* 59 FR 22585 (May 2, 1994). In accordance with the separate rates criteria, the Department assigns separate rates to companies in NME cases only if respondents can demonstrate the absence of both *de jure* and *de facto* government control over export activities.

All firms listed below that wish to qualify for separate rate status in the administrative reviews involving NME countries must complete, as appropriate, either a separate rate application or certification, as described below. For these administrative reviews, in order to demonstrate separate rate eligibility, the Department requires entities for whom a review was requested, that were assigned a separate rate in the most recent segment of this proceeding in which they participated, to certify that they continue to meet the criteria for obtaining a separate rate. The Separate Rate Certification form will be available on the Department's Web site at *http://enforcement.trade.gov/nme/nme-sep-rate.html* on the date of publication of this **Federal Register** notice. In responding to the certification, please follow the ''Instructions for Filing the Certification'' in the Separate Rate Certification. Separate Rate Certifications are due to the Department no later than 30 calendar days after publication of this **Federal Register** notice. The deadline and requirement for submitting a Certification applies equally to NME-owned firms, wholly foreign-owned firms, and foreign sellers who purchase and export subject merchandise to the United States.

Entities that currently do not have a separate rate from a completed segment of the proceeding[2] should timely file a

[1] *See Antidumping and Countervailing Duty Proceedings: Electronic Filing Procedures; Administrative Protective Order Procedures,* 76 FR 39263 (July 6, 2011).

[2] Such entities include entities that have not participated in the proceeding, entities that were preliminarily granted a separate rate in any

Separate Rate Application to demonstrate eligibility for a separate rate in this proceeding. In addition, companies that received a separate rate in a completed segment of the proceeding that have subsequently made changes, including, but not limited to, changes to corporate structure, acquisitions of new companies or facilities, or changes to their official company name,[3] should timely file a Separate Rate Application to demonstrate eligibility for a separate rate in this proceeding. The Separate Rate Status Application will be available on the Department's Web site at *http://enforcement.trade.gov/nme/nme-sep-rate.html* on the date of publication of this **Federal Register** notice. In responding to the Separate Rate Status Application, refer to the instructions contained in the application. Separate Rate Status Applications are due to the Department no later than 30 calendar days of publication of this **Federal Register** notice. The deadline and requirement for submitting a Separate Rate Status Application applies equally to NME-owned firms, wholly foreign-owned firms, and foreign sellers that purchase and export subject merchandise to the United States.

For exporters and producers who submit a separate-rate status application or certification and subsequently are selected as mandatory respondents, these exporters and producers will no longer be eligible for separate rate status unless they respond to all parts of the questionnaire as mandatory respondents.

Initiation of Reviews

In accordance with 19 CFR 351.221(c)(1)(i), we are initiating administrative reviews of the following antidumping and countervailing duty orders and findings. We intend to issue the final results of these reviews not later than September 30, 2016.

	Period to be reviewed
Antidumping Duty Proceedings	
India:	
Certain Lined Paper Products A–533–843	9/1/14–8/31/15
Goldenpalm Manufacturers PVT Limited.	
Kokuyo Riddhi Paper Products Private Limited.	
Lodha Offset Limited.	
Magic International Pvt. Ltd.	
Marisa International.	
Navneet Education Ltd.	
Pioneer Stationery Pvt. Ltd.	
SAB International.	
SGM Paper Products.	
Super Impex.	
Oil Country Tubular Goods A–533–857	2/25/14–8/31/15
GVN Fuels Limited.	
Oil Country Tubular Limited.	
United Seamless Tubulaar Pvt. Ltd.	
Mexico:	
Certain Magnesia Carbon Bricks A–201–837	9/1/14–8/31/15
Ferro Alliages & Mineraux Inc.	
RHI-Refmex SA. de C.V.	
Trafinsa S.A. de C.V.	
Vesuvius Mexico S.A. de C.V.	
Republic of Korea:	
Oil Country Tubular Goods A–580–870	7/18/14–8/31/15
A.R. Williams Materials.	
AJU Besteel Co., Ltd.	
AK Steel.	
BDP International.	
Cantak Corporation.	
Daewoo International Corporation.	
Dong-A Steel Co., Ltd.	
Dong Yang Steel Pipe.	
Dongbu Incheon Steel.	
Dongbu Steel Co., Ltd.	
Dongkuk S and C.	
DSEC.	
EEW Korea.	
Erndtebruecker Eisenwerk and Company.	
GS Global.	
H K Steel.	
Hansol Metal.	
HG Tubulars Canada Ltd.	
Husteel Co., Ltd.	
Hyundai Glovis.	
Hyundai HYSCO.	
Hyundai HYSCO Co., Ltd.	
Hyundai Mobis.	

currently incomplete segment of the proceeding (*e.g.*, an ongoing administrative review, new shipper review, *etc.*) and entities that lost their separate rate in the most recently completed segment of the proceeding in which they participated.

[3] Only changes to the official company name, rather than trade names, need to be addressed via a Separate Rate Application. Information regarding new trade names may be submitted via a Separate Rate Certification.

	Period to be reviewed
Hyundai RB.	
Hyundai Steel Company.	
Hyundai Steel Co., Ltd.	
ILJIN Steel Corporation.	
Kolon Global.	
Kukbo Logix.	
Kukje Steel.	
Kumkang Industrial Co., Ltd.	
McJunkin Red Man Tubular.	
NEXTEEL Q&T.	
NEXTEEL Co., Ltd.	
Nippon Arwwl and Aumikin Vuaan Korea Co., Ltd.	
Phocennee.	
POSCO Plantec.	
POSCO Processing and Acy Service.	
Samson.	
Samsung C and T Corporation.	
SeAH Steel Corporation.	
Sedae Entertech.	
Steel Canada.	
Steel Flower.	
Steelpia.	
Sung Jin.	
TGS Pipe.	
Toyota Tsusho Corporation.	
UNI Global Logistics.	
Yonghyun Base Materials.	
Socialist Republic of Vietnam:	
Oil Country Tubular Goods A–552–817	2/25/14–8/31/15
SeAH Steel VINA Corporation.	
Taiwan:	
Narrow Woven Ribbons with Woven Selvedge A–583–844	9/1/14–8/31/15
A-Madeus Textile Ltd.	
Fujian Rongshu Industry Co., Ltd.	
Roung Shu Industry Corporation.	
Xiamen Yi-He Textile Co. Ltd.	
Oil Country Tubular Goods A–583–850	7/18/14–8/31/15
Tension Steel Industries Co., Ltd.	
Shin Yang Steel Co., Ltd.	
The People's Republic of China:	
Certain Magnesia Carbon Bricks A–570–954	9/1/14–8/31/15
Dashiqiao City Guancheng Refractor Co., Ltd. (aka Dashiqiao City Guancheng. Refractory Co., Ltd.).	
Fedmet Resources Corporation.	
Fengchi Imp. And Exp. Co., Ltd. of Haicheng City.	
Fengchi Minging Co., Ltd of Haicheng City.	
Fengchi Refractories Co. of Haicheng City.	
Jiangsu Sujia Group New Materials Co., Ltd.	
Liaoning Fucheng Refractories Group Co., Ltd.	
Liaoning Fucheng Special Refractory Co., Ltd.	
Liaoning Jiayi Metals & Minerals Co., Ltd.	
Puyang Refractories Group Co., Ltd.	
RHI Refractories Liaoning Co., Ltd.	
Yingkou Bayuquan Refractories Co., Ltd.	
Yingkou Dalmond Refractories Co., Ltd.	
Yingkou Guangyang Co., Ltd.	
Yingkou Jiahe Refractories Co. Ltd.	
Yingkou Kyushu Refractories Co., Ltd.	
Yingkou New Century Refractories Ltd.	
Yingkou Wonjin Refractory Material Co., Ltd.	
Certain New Pneumatic Off-The-Road Tires A–570–912	9/1/14–8/31/15
Aeolus Tyre Co., Ltd.	
Shiyan Desizheng Industry & Trade Co., Ltd.	
Qingdao Jinhaoyang International Co., Ltd.	
Weifang Jintongda Tyre Co., Ltd.	
Sailun Jinyu Group Co., Ltd.	
Guizhou Tyre Co., Ltd.	
Guizhou Tyre Import and Export Co., Ltd.	
Qingdao Free Trade Zone Full-World International Trading Co., Ltd.	
Qingdao Qihang Tyre Co.	
Tianjin Leviathan International Trade Co., Ltd.	
Trelleborg Wheel Systems (Xingtai) China, Co. Ltd.	
Trelleborg Wheel Systems Hebei Co.	
Weihai Zhongwei Rubber Co., Ltd.	

	Period to be reviewed
Xuzhou Xugong Tyres Co. Ltd.	
Zhongce Rubber Group Company Limited.	
Freshwater Crawfish Tailmeat A–570–848	9/1/14–8/31/15
China Kingdom (Beijing) Import & Export Co., Ltd.	
Deyan Aquatic Products and Food Co., Ltd.	
Hubei Nature Agriculture Industry Co., Ltd.	
Hubei Yuesheng Aquatic Products Co., Ltd.	
Nanjing Gemsen International Co., Ltd.	
Weishan Hongda Aquatic Food Co., Ltd.	
Xiping Opeck Food Co., Ltd.	
Xuzhou Jinjiang Foodstuffs Co., Ltd.	
Yancheng Hi-King Agriculture Developing Co., Ltd.	
Narrow Woven Ribbons with Woven Selvedge A–570–952	9/1/14–8/31/15
Yama Ribbons and Bows Co., Ltd.	
Turkey:	
Oil Country Tubular Goods A–489–816	2/25/14–8/31/15
Borusan Mannesmann Boru Sanayi ve Ticaret A.Ş. and Borusan İstikbal Ticaret (collectively Borusan).[4]	
Çayirova Boru Sanayi ve Ticaret A.Ş. and Yücel Boru.	
İthalat-İhracat ve Pazarlama A.Ş.(collectively Yücel).[5]	
Çayirova Boru San A.Ş.	
HG Tubulars Canada Ltd.	
Tosçelik Profil ve Sac Endustrisi A.Ş.	
Tosyali Diş Ticaret A.Ş.	
Yücelboru İhracat, İthalat.	
Countervailing Duty Proceedings	
India:	
Certain Lined Paper Products C–533–844	1/1/14–12/31/14
Goldenpalm Manufacturers PVT Limited.	
Kokuyo Riddhi Paper Products Private Limited.	
Navneet Education Ltd.	
Oil Country Tubular Goods C–533–858	12/23/13—12/31/14
GVN Fuels Limited.	
Oil Country Tubular Ltd.	
United Seamless Tubulaar Pvt. Ltd.	
Jindal SAW Ltd.	
The People's Republic of China:	
Certain Magnesia Carbon Bricks C–570–955	1/1/14–12/31/14
Dashiquiao City Guancheng Refractor Co., Ltd. (aka Dashiqiao City Guancheng. Refractory Co., Ltd.).	
Fedmet Resources Corporation.	
Fengchi Imp. and Exp. Co., Ltd. of Haicheng City.	
Fengchi Mining Co., Ltd. of Haicheng City.	
Fengchi Refractories Co., of Haicheng City.	
Jiangsu Sujia Group New Materials Co., Ltd.	
Liaoning Fucheng Refractories Group Co., Ltd.	
Liaoning Fucheng Special Refractory Co., Ltd.	
Liaoning Jiayi Metals & Minerals Co., Ltd.	
Puyang Refractories Group Co., Ltd.	
RHI Refractories Liaoning Co., Ltd.	
Yingkou Bayuquan Refractories Co., Ltd.	
Yingkou Dalmond Refractories Co., Ltd.	
Yingkou Guangyang Co., Ltd.	
Yingkou Jiahe Refractories Co. Ltd.	
Yingkou Kyushu Refractories Co., Ltd.	
Yingkou New Century Refractories Ltd.	
Yingkou Wonjin Refractory Material Co., Ltd.	
Certain New Pneumatic Off-The-Road Tires C–570–913	1/1/14–12/31/14
Air Sea Transport Inc.	
Beijing Kang Jie Kong Intl Cargo Agent Co Ltd.	
C&D Intl Freight Forward Inc.	
Caesar Intl Logistics Co Ltd.	
CD Intl Freight Forwarding.	
Cheng Shin Rubber (Xiamen) Ind Ltd.	
China Intl Freight Co Ltd.	
Chonche Auto Double Happiness Tyre Corp Ltd.	
City Ocean Logistics Co Ltd.	
Consolidator Intl Co Ltd.	
CTS Intl Logistics Corp.	
De Well Container Shipping Inc.	
England Logistics (Qingdao) Co Ltd.	
Extra Type Co Ltd.	
Fedex International Freight Forwarding Services Shanghai Co Ltd.	

	Period to be reviewed
FG Intl Logistic Ltd.	
Guizhou Tyre Co., Ltd.	
Guizhou Tyre Import and Export Co., Ltd.	
JHJ Intl Transportation Co.	
Kendra Rubber (China) Co Ltd.	
Landmax Intl Co Ltd.	
Orient Express Container Co Ltd.	
Pudong Prime Intl Logistics Inc.	
Qingdao Aotai Rubber Co Ltd.	
Qingdao Chengtai Handtruck Co Ltd.	
Qingdao Chuangtong Founding Co Ltd.	
Qingdao Ftz Full-World Intl Trading Co Ltd.	
Qingdao Haomai Hongyi Mold Co Ltd.	
Qingdao Kaoyoung Intl Logistics Co Ltd.	
Qingdao Milestone Tyres Co Ltd.	
Qingdao Nexten Co Ltd.	
Qingdao Wonderland.	
Schenker China Ltd.	
SGL Logistics South China Ltd.	
Shanghai Grand South Intl Transportation Co Ltd.	
Shanghai Hua Shen Imp & Exp Co Ltd.	
Shanghai Part-Rich Auto Parts Co Ltd.	
Thi Group (Shanghai) Ltd.	
Tianjin United Tire & Rubber International Co., Ltd.	
Toll Global Forwarding China Ltd.	
Translink Shipping Inc.	
Trelleborg Wheel Systems Hebei Co.	
Universal Shipping Inc.	
UTI China Ltd.	
Weiss-Rohlig China Co Ltd.	
World Bridge Logistics Co Ltd.	
Xuzhou Xugong Tyres Co Ltd.	
Suspension Agreements	
None.	

Duty Absorption Reviews

During any administrative review covering all or part of a period falling between the first and second or third and fourth anniversary of the publication of an antidumping duty order under 19 CFR 351.211 or a determination under 19 CFR 351.218(f)(4) to continue an order or suspended investigation (after sunset review), the Secretary, if requested by a domestic interested party within 30 days of the date of publication of the notice of initiation of the review, will determine, consistent with *FAG Italia* v. *United States,* 291 F.3d 806 (Fed Cir. 2002), as appropriate, whether antidumping duties have been absorbed by an exporter or producer subject to the review if the subject merchandise is sold in the United States through an importer that is affiliated with such exporter or producer. The request must include the name(s) of the exporter or producer for which the inquiry is requested.

Gap Period Liquidation

For the first administrative review of any order, there will be no assessment of antidumping or countervailing duties on entries of subject merchandise entered, or withdrawn from warehouse, for consumption during the relevant provisional-measures ''gap'' period, of the order, if such a gap period is applicable to the POR.

Administrative Protective Orders and Letters of Appearance

Interested parties must submit applications for disclosure under administrative protective orders in accordance with 19 CFR 351.305. On January 22, 2008, the Department published *Antidumping and Countervailing Duty Proceedings: Documents Submission Procedures; APO Procedures,* 73 FR 3634 (January 22, 2008). Those procedures apply to administrative reviews included in this notice of initiation. Parties wishing to participate in any of these administrative reviews should ensure that they meet the requirements of these procedures (*e.g.,* the filing of separate letters of appearance as discussed at 19 CFR 351.103(d)).

Revised Factual Information Requirements

On April 10, 2013, the Department published *Definition of Factual Information and Time Limits for Submission of Factual Information: Final Rule,* 78 FR 21246 (April 10, 2013), which modified two regulations related to antidumping and countervailing duty proceedings: the definition of factual information (19 CFR 351.102(b)(21)), and the time limits for the submission of factual information (19 CFR 351.301). The final rule identifies five categories of factual information in 19 CFR 351.102(b)(21), which are summarized as follows: (i) Evidence submitted in response to questionnaires; (ii) evidence submitted in support of allegations; (iii) publicly

[4] Entries of merchandise produced and exported by Borusan Mannesmann Boru Sanayi ve Ticaret A.Ş. and Borusan İstikbal Ticaret (collectively Borusan) are not subject to antidumping duties because the Department's final determination with respect to this producer/exporter combination was negative. *See Certain Oil Country Tubular Goods From the Republic of Turkey: Final Determination of Sales at Less Than Fair Value and Affirmative Final Determination of Critical Circumstances in Part,* 79 FR 41971 at 41973 (*OCTG Turkey Final Determination*) (July 18, 2014). However, any entries of merchandise produced by any other entity and exported by Borusan or produced by Borusan and exported by another entity are subject to the order.

[5] We treated these companies as a single entity in the Department's final determination. *See OCTG Turkey Final Determination.*

available information to value factors under 19 CFR 351.408(c) or to measure the adequacy of remuneration under 19 CFR 351.511(a)(2); (iv) evidence placed on the record by the Department; and (v) evidence other than factual information described in (i) through (iv). The final rule requires any party, when submitting factual information, to specify under which subsection of 19 CFR 351.102(b)(21) the information is being submitted and, if the information is submitted to rebut, clarify, or correct factual information already on the record, to provide an explanation identifying the information already on the record that the factual information seeks to rebut, clarify, or correct. The final rule also modified 19 CFR 351.301 so that, rather than providing general time limits, there are specific time limits based on the type of factual information being submitted. These modifications are effective for all segments initiated on or after May 10, 2013. Please review the final rule, available at *http://enforcement.trade.gov/frn/2013/1304frn/2013-08227.txt,* prior to submitting factual information in this segment.

Any party submitting factual information in an antidumping duty or countervailing duty proceeding must certify to the accuracy and completeness of that information.[6] Parties are hereby reminded that revised certification requirements are in effect for company/government officials as well as their representatives. All segments of any antidumping duty or countervailing duty proceedings initiated on or after August 16, 2013, should use the formats for the revised certifications provided at the end of the *Final Rule.*[7] The Department intends to reject factual submissions in any proceeding segments if the submitting party does not comply with applicable revised certification requirements.

Revised Extension of Time Limits Regulation

On September 20, 2013, the Department modified its regulation concerning the extension of time limits for submissions in antidumping and countervailing duty proceedings: *Final Rule,* 78 FR 57790 (September 20, 2013). The modification clarifies that parties may request an extension of time limits before a time limit established under Part 351 expires, or as otherwise specified by the Secretary. In general, an extension request will be considered untimely if it is filed after the time limit established under Part 351 expires. For submissions which are due from multiple parties simultaneously, an extension request will be considered untimely if it is filed after 10:00 a.m. on the due date. Examples include, but are not limited to: (1) Case and rebuttal briefs, filed pursuant to 19 CFR 351.309; (2) factual information to value factors under 19 CFR 351.408(c), or to measure the adequacy of remuneration under 19 CFR 351.511(a)(2), filed pursuant to 19 CFR 351.301(c)(3) and rebuttal, clarification and correction filed pursuant to 19 CFR 351.301(c)(3)(iv); (3) comments concerning the selection of a surrogate country and surrogate values and rebuttal; (4) comments concerning U.S. Customs and Border Protection data; and (5) quantity and value questionnaires. Under certain circumstances, the Department may elect to specify a different time limit by which extension requests will be considered untimely for submissions which are due from multiple parties simultaneously. In such a case, the Department will inform parties in the letter or memorandum setting forth the deadline (including a specified time) by which extension requests must be filed to be considered timely. This modification also requires that an extension request must be made in a separate, stand-alone submission, and clarifies the circumstances under which the Department will grant untimely-filed requests for the extension of time limits. These modifications are effective for all segments initiated on or after October 21, 2013. Please review the final rule, available at *http://www.gpo.gov/fdsys/pkg/FR-2013-09-20/html/2013-22853.htm,* prior to submitting factual information in these segments.

These initiations and this notice are in accordance with section 751(a) of the Act (19 U.S.C. 1675(a)) and 19 CFR 351.221(c)(1)(i).

Dated: November 2, 2015.

Christian Marsh,

Deputy Assistant Secretary for Antidumping and Countervailing Duty Operations.

[FR Doc. 2015–28460 Filed 11–6–15; 8:45 am]

BILLING CODE 3510–DS–P

[6] *See* section 782(b) of the Act.

[7] *See Certification of Factual Information To Import Administration During Antidumping and Countervailing Duty Proceedings,* 78 FR 42678 (July 17, 2013) (''*Final Rule*''); *see also* the frequently asked questions regarding the *Final Rule,* available at *http://enforcement.trade.gov/tlei/notices/factual_info_final_rule_FAQ_07172013.pdf.*

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648–XE304

Mid-Atlantic Fishery Management Council (MAFMC); Meeting

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; public meeting.

SUMMARY: The Mid-Atlantic Fishery Management Council's (Council) Scientific and Statistical Committee (SSC) will hold a meeting.

DATES: The meeting will be held on Tuesday, November 24, 2015, from 1 p.m. to 4 p.m. For agenda details, see **SUPPLEMENTARY INFORMATION**.

ADDRESSES: The meeting will be held via webinar. Webinar connection details will be available at: *http://www.mafmc.org.*

Council address: Mid-Atlantic Fishery Management Council, 800 N. State Street, Suite 201, Dover, DE 19901; telephone: (302) 674–2331 or on their Web site at *www.mafmc.org.*

FOR FURTHER INFORMATION CONTACT: Christopher M. Moore, Ph.D., Executive Director, Mid-Atlantic Fishery Management Council, telephone: (302) 526–5255.

SUPPLEMENTARY INFORMATION: The Council's Scientific and Statistical Committee (SSC) will meet Tuesday, November 24, 2015 at 1 p.m. to review alternative methods for addressing missing 2014 survey data for spiny dogfish and to determine if any adjustment to its OFL/ABC recommendations for spiny dogfish are appropriate. Contact Jason Didden at (302) 526–5254 if you have questions about using a webinar to participate in a meeting. Briefing documents will be posted to *http://www.mafmc.org/ssc* when available.

Special Accommodations

This meeting is physically accessible to people with disabilities. Requests for sign language interpretation or other auxiliary aid should be directed to M. Jan Saunders, (302) 526–5251, at least 5 days prior to the meeting date.

Dated: November 4, 2015.

Tracey L. Thompson,

Acting Deputy Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. 2015–28430 Filed 11–6–15; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

Submission for OMB Review; Comment Request

The Department of Commerce will submit to the Office of Management and Budget (OMB) for clearance the following proposal for collection of information under the provisions of the Paperwork Reduction Act (44 U.S.C. Chapter 35).

Agency: National Oceanic and Atmospheric Administration (NOAA).

Title: Alaska Observer Program.

OMB Control Number: 0648–0318.

Form Number(s): None.

Type of Request: Regular (extension of a currently approved information collection).

Number of Respondents: 423.

Average Hours per Response: 8 hr to review and 1 hr to submit candidate college transcripts and statements, Observer provider; 1 hr for Observer training registration; 7 minutes for Observer briefing registration; 7 minutes each for Projected observer assignment and Observer deployment/logistics report; 5 minutes for Physical examination verification; 30 minutes each for Observer debriefing registration, Observer provider contracts and Industry Request for Assistance in Improving Observer Data Quality Issues; 12 minutes for Certificates of insurance; 1 hr for Other reports and Request for electronic monitoring as exemption for observer coverage; 60 hr for Observer provider permit application; 30 minutes for Observer provider invoice copies; 15 minutes each for Update to provider information, Observer declaration and deployment system (ODDs), Observer fee calculation and submittal and Notification of one-time election of observer coverage; 4 hours for Observer appeal.

Burden Hours: 2,643.

Needs and Uses: This request is for extension of a currently approved information collection.

The North Pacific Groundfish and Halibut Observer Program (Observer Program) plays a critical role in the conservation and management of Bering Sea, Aleutian Islands, and Gulf of Alaska groundfish and halibut fisheries. Five observer contracting companies provide observer services (see *http://www.afsc.noaa.gov/FMA/observer_providers.htm*) . Observers collect biological samples and fishery-dependent information on total catch and interactions with protected species. Managers use data collected by observers to monitor quotas, manage groundfish and prohibited species catch, and document and reduce fishery interactions with protected resources. Scientists use observer-collected data for stock assessments and marine ecosystem research.

All sectors of the groundfish fishery, including vessels less than 60 feet length overall and the commercial halibut sector, are now included in the Observer Program. The National Marine Fisheries Service (NMFS) has the flexibility to decide when and where to deploy observers based on a scientifically defensible deployment plan reviewed annually by the North Pacific Fishery Management Council. The Observer Program places all vessels and processors in the groundfish and halibut fisheries off Alaska into one of two observer coverage categories: a full coverage category and a partial coverage category.

Affected Public: Individuals or households; business or other for-profit organizations.

Frequency: Annually, weekly and on occasion.

Respondent's Obligation: Required to obtain or retain benefits.

This information collection request may be viewed at reginfo.gov. Follow the instructions to view Department of Commerce collections currently under review by OMB.

Written comments and recommendations for the proposed information collection should be sent within 30 days of publication of this notice to *OIRA_Submission@omb.eop.gov* or fax to (202) 395–5806.

Dated: November 4, 2015.

Sarah Brabson,

NOAA PRA Clearance Officer.

[FR Doc. 2015–28434 Filed 11–6–15; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

Submission for OMB Review; Comment Request

The Department of Commerce will submit to the Office of Management and Budget (OMB) for clearance the following proposal for collection of information under the provisions of the Paperwork Reduction Act (44 U.S.C. Chapter 35).

Agency: National Oceanic and Atmospheric Administration (NOAA).

Title: Southeast Region Permit Family of Forms.

OMB Control Number: 0648–0205.

Form Number(s): None.

Type of Request: Regular (revision of a currently approved information collection).

Number of Respondents: 13,909.

Average Hours per Response: 30 minutes.

Burden Hours: 6,086.

Needs and Uses: This request is for revision of a currently approved information collection.

This request is for a revision to the existing reporting requirements that are currently approved under OMB Control No. 0648–0205, Southeast Region Permit Family of Forms, in association with the upcoming final rule, Regulation Identifier Number (RIN) 0648–BB02, Amendment 9 to the 2006 Consolidated Atlantic Highly Migratory Species (HMS) Fishery Management Plan (FMP) (Amendment 9), developed under the authority of the Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. 1801.

The final rule, RIN 0648–BB02, would implement a number of Atlantic shark and smoothhound shark management measures and would establish an effective date for previously-adopted smoothhound shark management measures finalized in Amendment 3 to the 2006 Consolidated Atlantic HMS FMP (Amendment 3) and the 2011 Final Rule to Modify the Retention of Incidentally-Caught Highly Migratory Species in Atlantic Trawl Fisheries. Among these previously-adopted smoothhound shark management measures is a commercial smoothhound shark permit requirement. The commercial smoothhound shark permitting requirement contained in this rule would become effective at a date specified after approval of this revision request.

In April 2011, NMFS submitted a PRA change request to the Office of Management and Budget (OMB) to add the commercial smoothhound shark permit to the existing HMS permit PRA package (OMB Control No. 0648–0327). OMB subsequently approved the change request to add the Federal commercial smoothhound shark permit to the HMS permit PRA package in May 2011. In July 2015, the commercial smoothhound shark permit was removed from the HMS permit PRA package (OMB Control No. 0648–0327) with the intention of transferring it to the Southeast Region Permit Family of Forms. This revision seeks to add this permit to OMB Control No. 0648–0205, because the SERO Permits Office will administer the smoothhound shark permit. The revision also addresses a new permit fee of $25 ($10 if issued in conjunction with another SERO-administered permit) related to SERO's administration of the permit and a more accurate estimate of the number of respondents, reducing the estimated number of respondents from 4,000, to 500 based on recent landings data.

Specifically for the smoothhound shark commercial permit, NMFS estimates 500 respondents to apply. If a respondent already holds a SERO-administered permit, applying for a smoothhound shark permit would only require checking an additional box on the permits application form, which would take approximately 10 seconds. If the respondent does not hold a SERO-administered permit, a new application must be filled out, which would take approximately 30 minutes. Thus, the total annual burden estimate is between 1.4 hours and 250 hours. It is likely that many respondents already hold a permit issued through the SERO Permits Office due to participation in other SERO fisheries (including other shark fisheries), thus, they would simply need to check a box on their existing form. However, at this time, NMFS does not have an estimate of the number of respondents who would apply for this permit and that already hold a permit administered through the SERO Permits Office, and therefore, for the purpose of this revision request, NMFS assumes the high estimate of 250 burden hours annually for the commercial smoothhound shark permit.

There is a $25 fee for a stand-alone commercial smoothhound shark permit or a $10 fee if issued in conjunction with another SERO-administered permit. Thus, the total annual cost to the public for the permit is between $12,500 if none of the 500 respondents hold another SERO-administered permit and $5,000 if all the respondents hold another SERO-administered permit. For the purpose of this revision request, NMFS assumes the high estimate of $12,500 in total annual costs for the commercial smoothhound shark permit.

Affected Public: Business or other for-profit organizations; individuals or households.

Frequency: Annually and on occasion.

Respondent's Obligation: Mandatory.

This information collection request may be viewed at reginfo.gov. Follow the instructions to view Department of Commerce collections currently under review by OMB.

Written comments and recommendations for the proposed information collection should be sent within 30 days of publication of this notice to *OIRA_Submission@omb.eop.gov* or fax to (202) 395–5806.

Dated: November 4, 2015.

Sarah Brabson,

NOAA PRA Clearance Officer.

[FR Doc. 2015–28435 Filed 11–6–15; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF DEFENSE

Department of the Army, Corps of Engineers

Notice of Intent To Prepare an Integrated Feasibility Report and Environmental Impact Statement for the Lower Santa Cruz River Flood Risk Management Feasibility Study, Pinal County, Arizona

AGENCY: Department of the Army, U.S. Army Corps of Engineers, DoD.

ACTION: Notice of intent.

SUMMARY: Pursuant to the National Environmental Policy Act (NEPA), the U.S. Army Corps of Engineers, Los Angeles District (Corps) in partnership with the Pinal County Flood Control District intends to prepare an Integrated Feasibility Report and Environmental Impact Statement for the Lower Santa Cruz River Flood Risk Management Feasibility Study.

DATES: A public scoping meeting will be held on November 9, 2015 from 6:00 p.m. to 8:00 p.m. Submit written comments concerning this notice on or before December 9, 2015.

ADDRESSES: The scoping meeting location is: City of Casa Grande Council Chambers, 510 East Florence Blvd., Casa Grande, AZ 85122.

Mail written comments to: Mr. Kenneth Wong, U.S. Army Corps of Engineers, Los Angeles District, CESPL–PD–RQ, 915 Wilshire Blvd., Los Angeles, CA 90017.

FOR FURTHER INFORMATION CONTACT: Mr. Kenneth Wong, U.S. Army Corps of Engineers, Los Angeles District, CESPL–PD–RQ, 915 Wilshire Blvd., Los Angeles, CA 90017, (213) 452–3847, *kenneth.wong@usace.army.mil*.

SUPPLEMENTARY INFORMATION: The Lower Santa Cruz River Flood Risk Management Feasibility Study is authorized by the Flood Control Act of 1938 (Pub. L. 761, 75th Congress) for flood control studies on the Gila River and its tributaries in Arizona and New Mexico. The Santa Cruz River is a major tributary of the Gila River.

The study will evaluate strategies for minimizing flood risks along the Lower Santa Cruz River and its major tributaries within an approximately 1,400 square mile study area in Pinal County. The northern boundary of the study is the Santa Cruz River's confluence with the Gila River near the Maricopa County line. The southern boundary is the Pinal County-Pima County line.

The study will primarily focus on minimizing flood risks associated with large storm events originating from Mexico and Southern/Central Arizona. The study area has long been subject to damaging floods. Since 1887, 34 major floods have occurred on the river, an average of one event every three to four years. Six of the seven most damaging floods have occurred in the last 50 years. Damage has been widespread and devastating, including forced aerial evacuations; the loss of entire buildings; road and bridge closures; destruction of dams, levees, dikes, high-pressure gas lines, and crops; and severe erosion, channel migration, and sedimentation.

The potential for flood related damages has increased with continued population growth within the study area. Pinal County was the second fastest growing county in the United States during the past decade, nearly doubling its population to 375,000, with a projected population of one million by 2030.

Potential alternatives to be evaluated during the course of the study include:

Diversion/Bypass Channels. Capture floodwaters at an upstream location, and divert them away from high damage areas to Tat Momolikot Reservoir.

Channelization. Capture flood flows at an upstream location near Red Rock, and contain these flows in a channel to a point where they could be discharged into the Gila River.

Detention. Detain floodwaters upstream and release at a non-damaging flow rate.

Levees. Construct levees near populated areas and critical infrastructure.

Nonstructural. Prepare floodplain management plans; install flood warning systems and prepare emergency evacuation plans; elevate structures; flood proof structures; and relocate and/or buyout structures.

Additional alternatives that combine elements of those listed above may also be evaluated. In addition, the study would also evaluate the No Action alternative pursuant to NEPA.

The Corps and Pinal County Flood Control District will jointly conduct a public scoping meeting at the date and address indicated above. The purpose of the meeting is to present information regarding the study and receive public comment regarding the appropriate scope, potential alternatives, and environmental resources of concern. Participation of affected Federal, state and local resource agencies, Native American groups and concerned interest groups/individuals is encouraged.

The Draft Integrated Feasibility Report and Environmental Impact Statement is expected to be available for public review and comment in May 2017.

Dated: October 30, 2015.

Kirk E. Gibbs,

Colonel, U.S. Army, Commander and District Engineer.

[FR Doc. 2015–28495 Filed 11–6–15; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF ENERGY

[FE Docket No. 15–149–LNG]

ConocoPhillips Alaska Natural Gas Corporation; Application for Blanket Authorization To Export Liquefied Natural Gas to Non-Free Trade Agreement Nations on a Short-Term Basis

AGENCY: Office of Fossil Energy, DOE.

ACTION: Notice of application.

SUMMARY: The Office of Fossil Energy (FE) of the Department of Energy (DOE) gives notice of receipt of an application (Application), filed on September 28, 2015, by ConocoPhillips Alaska Natural Gas Corporation (CPANGC), requesting blanket authorization to export a quantity of liquefied natural gas (LNG) in an amount up to the equivalent of 40 billion cubic feet (Bcf) of natural gas on a cumulative basis over a two-year period. In the portion of the Application subject to this Notice, CPANGC seeks blanket authorization to export this volume of LNG from facilities located near Kenai, Alaska (Kenai LNG Facility), to any country with which the United States does not have a free trade agreement (FTA) requiring national treatment for trade in natural gas, and with which trade is not prohibited by U.S. law or policy (non-FTA countries).[1] CPANGC seeks to export this LNG on its own behalf and as agent for other entities who hold title to the LNG at the time of export. CPANGC requests the authorization for a two-year term to commence on February 19, 2016.[2] The Application was filed under section 3 of the Natural Gas Act (NGA). Additional details can be found in CPANGC's Application, posted on the DOE/FE Web site at: *http://energy.gov/sites/prod/files/2015/10/f27/ConocoPhillips15_149_LNG.pdf*.

Protests, motions to intervene, notices of intervention, and written comments are invited.

DATES: Protests, motions to intervene or notices of intervention, as applicable, requests for additional procedures, and written comments are to be filed using procedures detailed in the Public Comment Procedures section no later than 4:30 p.m., Eastern time, December 9, 2015.

ADDRESSES:

Electronic Filing by Email

fergas@hq.doe.gov.

Regular Mail

U.S. Department of Energy (FE–34), Office of Regulation and International Engagement, Office of Fossil Energy, P.O. Box 44375, Washington, DC 20026–4375.

Hand Delivery or Private Delivery Services (e.g., FedEx, UPS, etc.)

U.S. Department of Energy (FE–34), Office of Regulation and International Engagement, Office of Fossil Energy, Forrestal Building, Room 3E–042, 1000 Independence Avenue SW., Washington, DC 20585.

FOR FURTHER INFORMATION CONTACT:

Larine Moore or Marc Talbert, U.S. Department of Energy (FE–34), Office of Regulation and International Engagement, Office of Fossil Energy, Forrestal Building, Room 3E–042, 1000 Independence Avenue SW., Washington, DC 20585, (202) 586–9478; (202) 586–7991.

Cassandra Bernstein, U.S. Department of Energy (GC–76), Office of the Assistant General Counsel for Electricity and Fossil Energy, Forrestal Building, 1000 Independence Avenue SW., Washington, DC 20585, (202) 586–9793.

SUPPLEMENTARY INFORMATION:

DOE/FE Evaluation

The Application will be reviewed pursuant to section 3(a) of the NGA, 15 U.S.C. 717b(a). In reviewing this LNG export Application, DOE will consider issues required by law or policy. The Application is considered a renewal of previously issued authority (*see supra* n.2). To the extent determined to be relevant or appropriate, DOE/FE's review will include the impact of LNG exports associated with this Application on Alaskan regional domestic need for the natural gas proposed for export, adequacy of domestic natural gas supply in Alaska, and other issues, including whether the arrangement is consistent with DOE's policy of promoting competition in the marketplace by allowing commercial parties to freely negotiate their own trade arrangements. Parties that may oppose the Application should address these issues in their comments and/or protests, as well as other issues deemed relevant to the Application.

The National Environmental Policy Act (NEPA), 42 U.S.C. 4321 *et seq.*, requires DOE to give appropriate consideration to the environmental effects of its proposed decisions. No final decision will be issued in this proceeding until DOE has met its environmental responsibilities.

Interested persons will be provided 30 days from the date of publication of this Notice in which to submit comments, protests, motions to intervene, notices of intervention, or motions for additional procedures.

Public Comment Procedures

In response to this Notice, any person may file a protest, comments, or a motion to intervene or notice of intervention, as applicable. Interested parties will be provided 30 days from the date of publication of this Notice in which to submit comments, protests, motions to intervene, or notices of intervention.

Any person wishing to become a party to the proceeding must file a motion to intervene or notice of intervention. The filing of comments or a protest with respect to the Application will not serve to make the commenter or protestant a party to the proceeding, although protests and comments received from persons who are not parties will be considered in determining the appropriate action to be taken on the Application. All protests, comments, motions to intervene, or notices of intervention must meet the requirements specified by the regulations in 10 CFR part 590.

Filings may be submitted using one of the following methods: (1) Emailing the

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[1] In the Application, CPANGC also requests blanket authorization to export the same volume of LNG to any country that currently has, or in the future may enter into, a FTA requiring national treatment for trade in natural gas, and with which trade is not prohibited by U.S. law or policy (FTA countries). DOE/FE will review that request separately pursuant to section 3(c) of the Natural Gas Act, 15 U.S.C. 717b(c).

[2] According to CPANGC, February 19, 2016, is the day after its existing blanket authorization to export LNG from the Kenai LNG Facility to FTA countries will expire. CPANGC further states that its existing blanket authorization to export LNG from Alaska to non-FTA countries, issued in DOE/FE Order No. 3418, began on April 14, 2014, and extends through April 13, 2016. CPANGC states, however, that if the requested non-FTA authorization is granted to commence on February 19, 2016, CPANGC will relinquish the remainder of its non-FTA authorization in DOE/FE Order No. 3418 in light of DOE's policy against allowing a single entity to hold duplicate permits running concurrently. App. at 3.

filing to *fergas@hq.doe.gov,* with FE Docket No. 15–149–LNG in the title line; (2) mailing an original and three paper copies of the filing to the Office of Regulation and International Engagement at the address listed in **ADDRESSES**; or (3) hand delivering an original and three paper copies of the filing to the Office of Regulation and International Engagement at the address listed in **ADDRESSES**. All filings must include a reference to FE Docket No. 15–149–LNG. PLEASE NOTE: If submitting a filing via email, please include all related documents and attachments (*e.g.,* exhibits) in the original email correspondence. Please do not include any active hyperlinks or password protection in any of the documents or attachments related to the filing. All electronic filings submitted to DOE must follow these guidelines to ensure that all documents are filed in a timely manner. Any hardcopy filing submitted greater in length than 50 pages must also include, at the time of the filing, a digital copy on disk of the entire submission.

A decisional record on the Application will be developed through responses to this notice by parties, including the parties' written comments and replies thereto. Additional procedures will be used as necessary to achieve a complete understanding of the facts and issues. If an additional procedure is scheduled, notice will be provided to all parties. If no party requests additional procedures, a final Opinion and Order may be issued based on the official record, including the Application and responses filed by parties pursuant to this notice, in accordance with 10 CFR 590.316.

The Application is available for inspection and copying in the Office of Regulation and International Engagement docket room, Room 3E–042, 1000 Independence Avenue SW., Washington, DC 20585. The docket room is open between the hours of 8 a.m. and 4:30 p.m., Monday through Friday, except Federal holidays. The Application and any filed protests, motions to intervene or notice of interventions, and comments will also be available electronically by going to the following DOE/FE Web address: *http://www.fe.doe.gov/programs/gasregulation/index.html.*

Issued in Washington, DC, on November 3, 2015.

John A. Anderson,

Director, Office of Regulation and International Engagement, Office of Oil and Natural Gas.

[FR Doc. 2015–28438 Filed 11–6–15; 8:45 am]

BILLING CODE 6450–01–P

DEPARTMENT OF ENERGY

[OE Docket No. EA–373–A]

Application To Export Electric Energy; EDF Trading North America, LLC

AGENCY: Office of Electricity Delivery and Energy Reliability, DOE.

ACTION: Notice of application.

SUMMARY: EDF Trading North America, LLC (Applicant) has applied to renew its authority to transmit electric energy from the United States to Mexico pursuant to section 202(e) of the Federal Power Act.

DATES: Comments, protests, or motions to intervene must be submitted on or before December 9, 2015.

ADDRESSES: Comments, protests, motions to intervene, or requests for more information should be addressed to: Office of Electricity Delivery and Energy Reliability, Mail Code: OE–20, U.S. Department of Energy, 1000 Independence Avenue SW., Washington, DC 20585–0350. Because of delays in handling conventional mail, it is recommended that documents be transmitted by overnight mail, by electronic mail to *Electricity.Exports@hq.doe.gov,* or by facsimile to 202–586–8008.

SUPPLEMENTARY INFORMATION: Exports of electricity from the United States to a foreign country are regulated by the Department of Energy (DOE) pursuant to sections 301(b) and 402(f) of the Department of Energy Organization Act (42 U.S.C. 7151(b), 7172(f)) and require authorization under section 202(e) of the Federal Power Act (16 U.S.C. 824a(e)).

On November 30, 2010, DOE issued Order No. EA–373 to the Applicant, which authorized the Applicant to transmit electric energy from the United States to Mexico as a power marketer for a five-year term using existing international transmission facilities. That authority expires on November 30, 2015. On November 3, 2015, the Applicant filed an application with DOE for renewal of the export authority contained in Order No. EA–373 for an additional five-year term.

In its application, the Applicant states that it does not own or operate any electric generation or transmission facilities, and it does not have a franchised service area. The electric energy that the Applicant proposes to export to Mexico would be surplus energy purchased from third parties such as electric utilities and Federal power marketing agencies pursuant to voluntary agreements. The existing international transmission facilities to be utilized by the Applicant have previously been authorized by Presidential permits issued pursuant to Executive Order 10485, as amended, and are appropriate for open access transmission by third parties. The Applicant is also requesting expedited treatment of this renewal application as current export authority expires on November 30, 2015.

Procedural Matters: Any person desiring to be heard in this proceeding should file a comment or protest to the application at the address provided above. Protests should be filed in accordance with Rule 211 of the Federal Energy Regulatory Commission's (FERC) Rules of Practice and Procedures (18 CFR 385.211). Any person desiring to become a party to these proceedings should file a motion to intervene at the above address in accordance with FERC Rule 214 (18 CFR 385.214). Five copies of such comments, protests, or motions to intervene should be sent to the address provided above on or before the date listed above.

Comments and other filings concerning the Applicant's application to export electric energy to Mexico should be clearly marked with OE Docket No. EA–373–A. An additional copy is to be provided directly to Gerald Nemec, EDF Trading North America, LLC, 4700 West Sam Houston Parkway North, Suite 250, Houston, TX 77041 and to both Kenneth Irvin and Terence Healey, Sidley Austin LLP, 1501 K Street NW., Washington, DC 20005.

A final decision will be made on this application after the environmental impacts have been evaluated pursuant to DOE's National Environmental Policy Act Implementing Procedures (10 CFR part 1021) and after a determination is made by DOE that the proposed action will not have an adverse impact on the sufficiency of supply or reliability of the U.S. electric power supply system.

Copies of this application will be made available, upon request, for public inspection and copying at the address provided above, by accessing the program Web site at *http://energy.gov/node/11845,* or by emailing Angela Troy at *Angela.Troy@hq.doe.gov.*

Issued in Washington, DC, on November 3, 2015.

Brian Mills,

Director, Permitting and Siting, Office of Electricity Delivery and Energy Reliability.

[FR Doc. 2015–28439 Filed 11–6–15; 8:45 am]

BILLING CODE 6450–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. CP16–11–000]

Transwestern Pipeline Company, LLC; Notice of Prior Notice Request Under Blanket Authorization

Take notice that on October 23, 2015, Transwestern Pipeline Company, LLC (Transwestern) filed in Docket No. CP16–11–000, a prior notice request pursuant to sections 157.205, 157.206, 157.208 and 157.210 subpart F blanket certificate of the Federal Energy Regulatory Commission's (Commission) regulations under the Natural Gas Act (NGA) and Transwestern's blanket authorizations issued in Docket Nos. CP82–534–000, CP88–133–000. Southwest seeks authorization to construct, own, operate, and maintain 14.67 miles of 16-inch pipeline, one meter station, and other ancillary facilities in Eddy and Lea Counties, New Mexico, to receive up to 200,000 Mcf per day of natural gas from a new cryogenic natural gas processing plant, as part of the Malaga Lateral Project (Project) in Eddy County, New Mexico, all as more fully set forth in the application which is on file with the Commission and open for public inspection. The cost of the Project is estimated to be $23 million. The filing may also be viewed on the web at *http://www.ferc.gov* using the ''eLibrary'' link. Enter the docket number excluding the last three digits in the docket number field to access the document. For assistance, contact FERC at *FERCOnlineSupport@ferc.gov* or call toll-free, (866) 208–3676 or TTY, (202) 502–8659.

Any questions concerning this application may be directed to: Mr. Kelly Allen, Manager, Certificates and Reporting, Transwestern Pipeline Company, LLC, 1300 Main Street, Houston, Texas 77002, by phone at (713) 989–2606, or fax (713) 989–1205 or email at *Kelly.Allen@energytransfer.com.*

Any person may, within 60 days after the issuance of the instant notice by the Commission, file pursuant to Rule 214 of the Commission's Procedural Rules (18 CFR 385.214) a motion to intervene or notice of intervention. Any person filing to intervene or the Commission's staff may, pursuant to section 157.205 of the Commission's Regulations under the NGA (18 CFR 157.205) file a protest to the request. If no protest is filed within the time allowed therefore, the proposed activity shall be deemed to be authorized effective the day after the time allowed for protest. If a protest is filed and not withdrawn within 30 days after the time allowed for filing a protest, the instant request shall be treated as an application for authorization pursuant to section 7 of the NGA.

Pursuant to section 157.9 of the Commission's rules, 18 CFR 157.9, within 90 days of this Notice the Commission staff will either: Complete its environmental assessment (EA) and place it into the Commission's public record (eLibrary) for this proceeding; or issue a Notice of Schedule for Environmental Review. If a Notice of Schedule for Environmental Review is issued, it will indicate, among other milestones, the anticipated date for the Commission staff's issuance of the final environmental impact statement (FEIS) or EA for this proposal. The filing of the EA in the Commission's public record for this proceeding or the issuance of a Notice of Schedule for Environmental Review will serve to notify federal and state agencies of the timing for the completion of all necessary reviews, and the subsequent need to complete all federal authorizations within 90 days of the date of issuance of the Commission staff's FEIS or EA.

Persons who wish to comment only on the environmental review of this project should submit an original and two copies of their comments to the Secretary of the Commission. Environmental commenters will be placed on the Commission's environmental mailing list, will receive copies of the environmental documents, and will be notified of meetings associated with the Commission's environmental review process. Environmental commenters will not be required to serve copies of filed documents on all other parties. However, the non-party commenters will not receive copies of all documents filed by other parties or issued by the Commission (except for the mailing of environmental documents issued by the Commission) and will not have the right to seek court review of the Commission's final order.

The Commission strongly encourages electronic filings of comments, protests, and interventions via the internet in lieu of paper. See 18 CFR 385.2001(a)(1)(iii) and the instructions on the Commission's Web site (*www.ferc.gov*) under the ''e-Filing'' link. Persons unable to file electronically should submit an original and 5 copies of the protest or intervention to the Federal Energy regulatory Commission, 888 First Street NE., Washington, DC 20426.

Dated: November 3, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28420 Filed 11–6–15; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. EL16–9–000]

Big Sandy Peaker Plant, LLC, Wolf Hills Energy, LLC, Crete Energy Venture, LLC, Lincoln Generating Facility, LLC, Rolling Hills Generating, L.L.C. v. PJM Interconnection, L.L.C.; Notice of Complaint

Take notice that on November 3, 2015, pursuant to sections 206 and 306 of the Federal Power Act, 16 U.S.C. 824e and 825e (2012) and Rule 206 of the Federal Energy Regulatory Commission's (Commission) Rules of Practice and Procedure, 18 CFR 385.206 (2015), Big Sandy Peaker Plant, LLC, Wolf Hills Energy, LLC, Crete Energy Venture, LLC, Lincoln Generating Facility, LLC, and Rolling Hills Generating, L.L.C., (collectively Complainants) filed a complaint against PJM Interconnection, L.L.C. (PJM or Respondent) alleging that PJM violated its Open Access Transmission Tariff and acted in contravention of the filed rate doctrine by finding that the generation units owned and operated by the Complainants were not eligible to provide Tier 1 Synchronized Reserve effective retroactively to October 1, 2013, and by invoicing the Complainants for adjustments to payments previously made by PJM to the Complainants for providing Tier 1 Synchronized Reserve during the period from October 1, 2013 to July 1, 2014, all as more fully explained in the complaint.

The Complainant certifies that copies of the complaint were served on the contacts for the Respondent as listed on the Commission's list of corporate officials.

Any person desiring to intervene or to protest this filing must file in accordance with Rules 211 and 214 of the Commission's Rules of Practice and Procedure (18 CFR 385.211, 385.214). Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a notice of intervention or motion to intervene, as appropriate. The Respondent's answer and all interventions, or protests must be filed on or before the comment date. The Respondent's answer, motions to intervene, and protests must be served on the Complainants.

The Commission encourages electronic submission of protests and interventions in lieu of paper using the ''eFiling'' link at *http://www.ferc.gov*. Persons unable to file electronically should submit an original and 5 copies of the protest or intervention to the Federal Energy Regulatory Commission, 888 First Street NE., Washington, DC 20426.

This filing is accessible on-line at *http://www.ferc.gov,* using the ''eLibrary'' link and is available for electronic review in the Commission's Public Reference Room in Washington, DC. There is an ''eSubscription'' link on the Web site that enables subscribers to receive email notification when a document is added to a subscribed docket(s). For assistance with any FERC Online service, please email *FERCOnlineSupport@ferc.gov,* or call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Comment Date: 5:00 p.m. Eastern Time on December 3, 2015.

Dated: November 3, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28424 Filed 11–6–15; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

Combined Notice of Filings #1

Take notice that the Commission received the following electric corporate filings:

Docket Numbers: EC16–25–000.
Applicants: Florida Power & Light Company.
Description: Application for Authorization Under Section 203 of the Federal Power Act and Request for Expedited Action of Florida Power & Light Company.
Filed Date: 11/2/15.
Accession Number: 20151102–5263.
Comments Due: 5 p.m. ET 11/23/15.

Take notice that the Commission received the following electric rate filings:

Docket Numbers: ER10–1484–012.
Applicants: Shell Energy North America (US), L.P.
Description: Notice of Non-Material Change in Status of Shell Energy North America (US), L.P.
Filed Date: 11/2/15.
Accession Number: 20151102–5298.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER10–2806–002; ER10–2818–002; ER10–2847–002; ER14–963–002; ER13–2386–005.
Applicants: TransAlta Energy Marketing (U.S.) Inc., TransAlta Energy Marketing Corporation, TransAlta Centralia Generation LLC, TransAlta Wyoming Wind LLC, Lakeswind Power Partners, LLC.
Description: Notice of Change in Status of the TransAlta MBR Entities.
Filed Date: 11/2/15.
Accession Number: 20151102–5267.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER15–1453–000.
Applicants: Entergy Arkansas, Inc., Entergy Gulf States Louisiana, L.L.C., Entergy Louisiana, LLC, Entergy Mississippi, Inc., Entergy New Orleans, Inc., Entergy Texas, Inc.
Description: Supplement to April 1, 2015 Application of Entergy Services, Inc., on behalf of the Entergy Operating Companies with actual 2014 PBOP amounts to be included in the 2015 formula rate update.
Filed Date: 10/30/15.
Accession Number: 20151030–5253.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ER16–243–000.
Applicants: PJM Interconnection, L.L.C.
Description: Tariff Cancellation: Notice of Cancellation of Service Agreement No. 3105 (PJM–DP&L NITSA) to be effective 1/1/2016.
Filed Date: 11/2/15.
Accession Number: 20151102–5245.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–244–000.
Applicants: Southwest Power Pool, Inc.
Description: Section 205(d) Rate Filing: 3095 Missouri River Energy Services NITSA and NOA to be effective 10/1/2015.
Filed Date: 11/2/15.
Accession Number: 20151102–5248.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–245–000.
Applicants: Southwest Power Pool, Inc.
Description: Section 205(d) Rate Filing: 3126 WAPA NITSA and NOA to be effective 10/1/2015.
Filed Date: 11/2/15.
Accession Number: 20151102–5254.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–246–000.
Applicants: Golden Spread Electric Cooperative, Inc.
Description: Section 205(d) Rate Filing: WPC 2016 Amendment Filing to be effective 1/1/2016.
Filed Date: 11/2/15.
Accession Number: 20151102–5255.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–247–000.
Applicants: Southwest Power Pool, Inc.
Description: Section 205(d) Rate Filing: 3127 Montana-Dakota Utilities Co. NITSA and NOA to be effective 10/1/2015.
Filed Date: 11/2/15.
Accession Number: 20151102–5260.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–248–000.
Applicants: Midcontinent Independent System Operator, Inc.
Description: Request for Waiver of Midcontinent Independent System Operator, Inc.
Filed Date: 11/2/15.
Accession Number: 20151102–5302.
Comments Due: 5 p.m. ET 11/23/15.

The filings are accessible in the Commission's eLibrary system by clicking on the links or querying the docket number.

Any person desiring to intervene or protest in any of the above proceedings must file in accordance with Rules 211 and 214 of the Commission's Regulations (18 CFR 385.211 and 385.214) on or before 5:00 p.m. Eastern time on the specified comment date. Protests may be considered, but intervention is necessary to become a party to the proceeding.

eFiling is encouraged. More detailed information relating to filing requirements, interventions, protests, service, and qualifying facilities filings can be found at: *http://www.ferc.gov/docs-filing/efiling/filing-req.pdf.* For other information, call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Dated: November 3, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28418 Filed 11–6–15; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

Combined Notice of Filings–2

Take notice that the Commission has received the following Natural Gas Pipeline Rate and Refund Report filings:

Filings Instituting Proceedings

Docket Numbers: RP16–91–000.
Applicants: Southern Star Central Gas Pipeline, Inc.
Description: Section 4(d) Rate Filing: Auction Procedures MBR Storage Filing to be effective 12/1/2015.

Filed Date: 10/29/15.
Accession Number: 20151029–5166.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–92–000.
Applicants: Questar Overthrust Pipeline Company.
Description: Section 4(d) Rate Filing: 26 Standards of Conduct to be effective 12/1/2015.
Filed Date: 10/29/15.
Accession Number: 20151029–5194.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–93–000.
Applicants: Equitrans, L.P.
Description: Compliance filing Operational Purchases and Sales Report for 2015.
Filed Date: 10/29/15.
Accession Number: 20151029–5200.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–94–000.
Applicants: Questar Pipeline Company.
Description: Section 4(d) Rate Filing: 23 Standards of Conduct to be effective 12/1/2015.
Filed Date: 10/29/15.
Accession Number: 20151029–5204.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–95–000.
Applicants: Questar Southern Trails Pipeline Company.
Description: Section 4(d) Rate Filing: 29 Standards of Conduct to be effective 12/1/2015.
Filed Date: 10/29/15.
Accession Number: 20151029–5205.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–96–000.
Applicants: Midwestern Gas Transmission Company.
Description: Compliance filing 2014–2015 Gas Sales and Purchases Report.
Filed Date: 10/29/15.
Accession Number: 20151029–5206.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–97–000.
Applicants: Destin Pipeline Company, L.L.C.
Description: Section 4(d) Rate Filing: Fuel Retention Adjustment Oct 2015 to be effective 12/1/2015.
Filed Date: 10/29/15.
Accession Number: 20151029–5219.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–98–000.
Applicants: Midwestern Gas Transmission Company.
Description: Compliance filing 2014–2015 Cashout Report.
Filed Date: 10/29/15.
Accession Number: 20151029–5238.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–99–000.
Applicants: Iroquois Gas Transmission System, L.P.
Description: Section 4(d) Rate Filing: 10/29/15 Negotiated Rates—Direct Energy Business Marketing, LLC (HUB) 7465–89 to be effective 11/1/2015.
Filed Date: 10/29/15.
Accession Number: 20151029–5253.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–100–000.
Applicants: Viking Gas Transmission Company.
Description: Compliance filing 2014–2015 Gas Sales and Purchases Report.
Filed Date: 10/29/15.
Accession Number: 20151029–5256.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–101–000.
Applicants: Alliance Pipeline L.P.
Description: Section 4(d) Rate Filing: November 1–30 2015 Auction to be effective 11/1/2015.
Filed Date: 10/29/15.
Accession Number: 20151029–5287.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–102–000.
Applicants: Stagecoach Pipeline & Storage Company, L.
Description: Section 4(d) Rate Filing: Stagecoach Pipeline & Storage Company LLC—Filing of New Baseline Tariff to be effective 10/29/2015.
Filed Date: 10/29/15.
Accession Number: 20151029–5312.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–103–000.
Applicants: Iroquois Gas Transmission System, L.P.
Description: Section 4(d) Rate Filing: 10/29/15 Negotiated Rates—Trafigura Trading LLC (HUB) 7445–89 to be effective 11/1/2015.
Filed Date: 10/29/15.
Accession Number: 20151029–5355.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–104–000.
Applicants: Stagecoach Pipeline & Storage Company, L.
Description: Tariff Cancellation: Stagecoach Pipeline & Storage Company LLC—Cancellation of Tariff to be effective 10/29/2015.
Filed Date: 10/29/15.
Accession Number: 20151029–5375.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–105–000.
Applicants: National Fuel Gas Supply Corporation.
Description: Section 4(d) Rate Filing: Non-Conforming (TGP) to be effective 11/1/2015.
Filed Date: 10/29/15.
Accession Number: 20151029–5461.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–106–000.
Applicants: Transcontinental Gas Pipe Line Company.
Description: Section 4(d) Rate Filing: Leidy Southeast Rate Filing to be effective 12/1/2015.
Filed Date: 10/29/15.
Accession Number: 20151029–5478.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–107–000.
Applicants: Iroquois Gas Transmission System, L.P.
Description: Section 4(d) Rate Filing: 10/29/15 Negotiated Rates—Cargill Incorporated (HUB) 3085–89 to be effective 11/1/2015.
Filed Date: 10/29/15.
Accession Number: 20151029–5502.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–108–000.
Applicants: Wyoming Interstate Company, L.L.C.
Description: Section 4(d) Rate Filing: FL&U Effective 12–1–15 to be effective 12/1/2015.
Filed Date: 10/29/15.
Accession Number: 20151029–5503.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–109–000.
Applicants: Iroquois Gas Transmission System, L.P.
Description: Section 4(d) Rate Filing: 10/29/15 Negotiated Rates—Mietco (HUB) 7080–89 to be effective 11/1/2015.
Filed Date: 10/29/15.
Accession Number: 20151029–5505.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–110–000.
Applicants: TransColorado Gas Transmission Company L.
Description: Section 4(d) Rate Filing: Firm Transportation Service Options Filing to be effective 11/1/2015.
Filed Date: 10/29/15.
Accession Number: 20151029–5539.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–111–000.
Applicants: Midcontinent Express Pipeline LLC.
Description: Section 4(d) Rate Filing: RP16-Fuel Tracking Filing to be effective 12/1/2015.
Filed Date: 10/29/15.
Accession Number: 20151029–5547.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP16–112–000.
Applicants: Transcontinental Gas Pipe Line Company.
Description: Section 4(d) Rate Filing: Maiden Lateral Surcharge Dec 2015 Update to be effective 12/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5064.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–113–000.
Applicants: Texas Gas Transmission, LLC.
Description: Section 4(d) Rate Filing: NC & Neg Rate Agmts (Atmos 21789, Anadarko 21939, Atmos 32658, Clarksdale 20393 to be effective 11/1/2015.
Filed Date: 10/30/15.

Accession Number: 20151030–5124.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–114–000.
Applicants: Trunkline Gas Company, LLC.
Description: Compliance filing Annual Interruptible Storage Revenue Credit filed on 10–30–15.
Filed Date: 10/30/15.
Accession Number: 20151030–5139.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–115–000.
Applicants: ETC Tiger Pipeline, LLC.
Description: Section 4(d) Rate Filing: Fuel Filing on 10–30–15 to be effective 12/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5140.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–116–000.
Applicants: Fayetteville Express Pipeline LLC.
Description: Section 4(d) Rate Filing: Fuel Filing on 10–30–15 to be effective 12/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5141.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–117–000.
Applicants: Enable Gas Transmission, LLC.
Description: Section 4(d) Rate Filing: Negotiated Rate Filing- November 2015 Devon 1009900 Removal to be effective 11/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5163.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–118–000.
Applicants: Golden Triangle Storage, Inc.
Description: Compliance filing Compliance Filing per Order on Petition for Declaratory Order Dkt. No. RP15–132 to be effective 12/15/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5169.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–119–000.
Applicants: Transcontinental Gas Pipe Line Company.
Description: Section 4(d) Rate Filing: Non-Conforming Agreements—Leidy Southeast to be effective 12/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5183.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–120–000.
Applicants: Southern LNG Company, L.L.C.
Description: Section 4(d) Rate Filing: SLNG Electric Power Cost Adjustment—2015 to be effective 12/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5189.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–121–000.
Applicants: Columbia Gas Transmission, LLC.
Description: Section 4(d) Rate Filing: OTRA—Winter 2015 to be effective 12/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5194.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–122–000.
Applicants: Columbia Gas Transmission, LLC.
Description: Section 4(d) Rate Filing: Tariff Clean-Up Filing to be effective 12/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5204.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–123–000.
Applicants: Transcontinental Gas Pipe Line Company.
Description: Section 4(d) Rate Filing: DPEs—Piedmont to be effective 12/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5215.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–124–000.
Applicants: Rockies Express Pipeline LLC.
Description: Section 4(d) Rate Filing: Neg Rate 2015–10–30 Encana to be effective 11/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5216.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–125–000.
Applicants: Iroquois Gas Transmission System, L.P.
Description: Section 4(d) Rate Filing: 10/30/15 Negotiated Rates—DTE Energy Trading, Inc. (HUB) 1830–89 to be effective 11/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5217.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–126–000.
Applicants: Iroquois Gas Transmission System, L.P.
Description: Section 4(d) Rate Filing: 10/30/15 Negotiated Rates—Freepoint Commodities LLC (HUB) 7250–89 to be effective 11/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5225.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–127–000.
Applicants: Texas Eastern Transmission, LP.
Description: Section 4(d) Rate Filing: ConEd NJNY Releases for 11–1–2015 to be effective 11/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5245.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–128–000.
Applicants: Algonquin Gas Transmission, LLC.
Description: Section 4(d) Rate Filing: BUG Ramapo Releases for 11–1–2015 to be effective 11/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5246.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–129–000.
Applicants: Algonquin Gas Transmission, LLC.
Description: Section 4(d) Rate Filing: ConEd Ramapo Releases for 11–1–2015 to be effective 11/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5247.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–130–000.
Applicants: Algonquin Gas Transmission, LLC.
Description: Section 4(d) Rate Filing: KeySpan Ramapo Releases for 11–1–2015 to be effective 11/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5248.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–131–000.
Applicants: Gulf South Pipeline Company, LP.
Description: Section 4(d) Rate Filing: Establish Fuel Tracker to be effective 4/1/2016.
Filed Date: 10/30/15.
Accession Number: 20151030–5251.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–132–000.
Applicants: Southern Star Central Gas Pipeline, Inc.
Description: Section 4(d) Rate Filing: Misc Tariff Filing October 2015 to be effective 12/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5287.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–133–000.
Applicants: Texas Eastern Transmission, LP.
Description: Section 4(d) Rate Filing: Negotiated Rate—SoJersey 11–1–2015 NJNY 8939244 to be effective 11/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5297.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–134–000.
Applicants: ANR Pipeline Company.
Description: Section 4(d) Rate Filing: Negotiated Rate Agmts to be effective 11/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5299.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–135–000.
Applicants: Northern Border Pipeline Company.
Description: Section 4(d) Rate Filing: PAL Flexibility Revisions to be effective 12/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5308.

Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–136–000.
Applicants: Northern Natural Gas Company.
Description: Petition of Northern Natural Gas Company for a Limited Waiver of Tariff Provisions and Request for Shortened Comment Period under RP16–136.
Filed Date: 10/30/15.
Accession Number: 20151030–5321.
Comments Due: 5 p.m. ET 11/6/15.

Docket Numbers: RP16–137–000.
Applicants: Tallgrass Interstate Gas Transmission, L.
Description: Section 4(d) Rate Filing: Section 4 Rate Case Filing (1 of 2) to be effective 5/1/2016.
Filed Date: 10/30/15.
Accession Number: 20151030–5356.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–138–000.
Applicants: Algonquin Gas Transmission, LLC.
Description: Section 4(d) Rate Filing: Negotiated Rates—SoJersey Ramapo 790822 to be effective 11/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5389.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–139–000.
Applicants: Tallgrass Interstate Gas Transmission, L.
Description: Section 4(d) Rate Filing: Neg Rate 2015/10/30 Nebraska Corn to be effective 11/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5421.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–140–000.
Applicants: Eastern Shore Natural Gas Company.
Description: Section 4(d) Rate Filing: Non-Conforming Contract No. 010153 to be effective 10/30/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5422.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–141–000.
Applicants: Natural Gas Pipeline Company of America.
Description: Section 4(d) Rate Filing: Removal of Expired Agreement to be effective 12/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5423.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–142–000.
Applicants: Algonquin Gas Transmission, LLC.
Description: Section 4(d) Rate Filing: Negotiated Rate—ConEdison Energy Ramapo 790737 to be effective 11/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5427.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–143–000.
Applicants: Algonquin Gas Transmission, LLC.
Description: Section 4(d) Rate Filing: Negotiated Rates—BP Energy 11–1–2015 Ramapo Releases to be effective 11/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5430.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–144–000.
Applicants: TransColorado Gas Transmission Company L.
Description: Section 4(d) Rate Filing: Non-Conforming Service Agreement (NMG) to be effective 11/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5433.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–145–000.
Applicants: Portland Natural Gas Transmission System.
Description: Section 4(d) Rate Filing: Freepoint Commodities Neg Rate Agmt to be effective 11/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5434.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–146–000.
Applicants: Alliance Pipeline L.P.
Description: Section 4(d) Rate Filing: Negotiated Rate Filing NSO December 1, 2015 to be effective 12/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5436.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–147–000.
Applicants: Northern Natural Gas Company.
Description: Section 4(d) Rate Filing: 20151030 Negotiated Rate to be effective 11/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5437.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–148–000.
Applicants: Texas Eastern Transmission, LP.
Description: Section 4(d) Rate Filing: TETLP ASA DEC 2015 FILING to be effective 12/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5438.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–149–000.
Applicants: Alliance Pipeline L.P.
Description: Section 4(d) Rate Filing: Tariff Waiver Adjustment Hess to be effective 12/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5442.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–150–000.
Applicants: Iroquois Gas Transmission System, L.P.
Description: Section 4(d) Rate Filing: 10/30/15 Negotiated Rates—Consolidated Edison Company of New York, Inc. to be effective 11/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5443.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–151–000.
Applicants: Alliance Pipeline L.P.
Description: Section 4(d) Rate Filing: New Services Offering Update to be effective 12/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5450.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–152–000.
Applicants: Columbia Gas Transmission, LLC.
Description: Columbia Gas Transmission, LLC submits Off System Capacity Request.
Filed Date: 10/30/15.
Accession Number: 20151030–5488.
Comments Due: 5 p.m. ET 11/12/15.

Docket Numbers: RP16–153–000.
Applicants: Apache Corporation, Navitas Midstream Midland Basin, LLC.
Description: Joint Petition for Temporary Waiver of Apache Corporation and Navitas Midstream Midland Basin, LLC under RP16–153.
Filed Date: 10/30/15.
Accession Number: 20151030–5493.
Comments Due: 5 p.m. ET 11/6/15.

Any person desiring to intervene or protest in any of the above proceedings must file in accordance with Rules 211 and 214 of the Commission's Regulations (18 CFR 385.211 and 385.214) on or before 5:00 p.m. Eastern time on the specified comment date. Protests may be considered, but intervention is necessary to become a party to the proceeding.

Filings in Existing Proceedings

Docket Numbers: RP15–65–003.
Applicants: Gulf South Pipeline Company, LP.
Description: Compliance filing Motion to Place Interim Settlement Rates into Effect to be effective 11/1/2015.
Filed Date: 10/29/15.
Accession Number: 20151029–5024.
Comments Due: 5 p.m. ET 11/10/15.

Docket Numbers: RP15–1022–002.
Applicants: Alliance Pipeline L.P.
Description: Compliance filing Compliance Filing New Services Offering to be effective 12/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5431.
Comments Due: 5 p.m. ET 11/12/15.

Any person desiring to protest in any of the above proceedings must file in accordance with Rule 211 of the Commission's Regulations (18 CFR 385.211) on or before 5:00 p.m. Eastern time on the specified comment date.

The filings are accessible in the Commission's eLibrary system by clicking on the links or querying the docket number.

eFiling is encouraged. More detailed information relating to filing requirements, interventions, protests, service, and qualifying facilities filings can be found at: *http://www.ferc.gov/docs-filing/efiling/filing-req.pdf.* For other information, call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Dated: November 2, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28397 Filed 11–6–15; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. NJ16–1–000]

City of Vernon, California; Notice of Filing

Take notice that on October 28, 2015, City of Vernon, California submitted its tariff filing: Filing 2016 Transmission Revenue Requirement and Transmission Revenue Balancing Account Adjustment, to be effective 1/1/2016.

Any person desiring to intervene or to protest this filing must file in accordance with Rules 211 and 214 of the Commission's Rules of Practice and Procedure (18 CFR 385.211, 385.214). Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a notice of intervention or motion to intervene, as appropriate. Such notices, motions, or protests must be filed on or before the comment date. On or before the comment date, it is not necessary to serve motions to intervene or protests on persons other than the Applicant.

The Commission encourages electronic submission of protests and interventions in lieu of paper using the ''eFiling'' link at *http://www.ferc.gov.* Persons unable to file electronically should submit an original and 5 copies of the protest or intervention to the Federal Energy Regulatory Commission, 888 First Street NE., Washington, DC 20426.

This filing is accessible on-line at *http://www.ferc.gov,* using the ''eLibrary'' link and is available for review in the Commission's Public Reference Room in Washington, DC. There is an ''eSubscription'' link on the Web site that enables subscribers to receive email notification when a document is added to a subscribed docket(s). For assistance with any FERC Online service, please email *FERCOnlineSupport@ferc.gov,* or call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Comment Date: 5:00 p.m. Eastern Time on November 18, 2015.

Dated: November 2, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28392 Filed 11–6–15; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Project No. 13877–003]

Mahoning Hydropower, LLC; Notice of Surrender of Preliminary Permit

Take notice that Mahoning Hydropower, LLC, permittee for the proposed Stonewall Jackson Hydroelectric Project, has requested that its preliminary permit be terminated. The permit was issued on April 1, 2011,[1] extended on March 20, 2014 for an additional two years,[2] and would have expired on March 31, 2016. The project would have been located at the existing U.S. Army Corps of Engineers' Stonewall Jackson Dam on the West Fork River in Lewis County, West Virginia.

The preliminary permit for Project No. 13877 will remain in effect until the close of business, December 2, 2015. But, if the Commission is closed on this day, then the permit remains in effect until the close of business on the next day in which the Commission is open.[3] New applications for this site may not be submitted until after the permit surrender is effective.

Dated: November 2, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28393 Filed 11–6–15; 8:45 am]

BILLING CODE 6717–01–P

[1] 135 FERC ¶ 62,001 (2011).

[2] 146 FERC ¶ 62,194 (2014).

[3] 18 CFR 385.2007(a)(2) (2015).

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Project No. 2662–027]

FirstLight Hydro Generation Company; Notice of Availability of Environmental Assessment

In accordance with the National Environmental Policy Act of 1969 and the Federal Energy Regulatory Commission (Commission) regulations, 18 CFR part 380 (Order No. 486, 52 FR 47897), the Office of Energy Projects has reviewed an application submitted by FirstLight Hydro Generation Company (licensee) to amend the license for the Scotland Hydroelectric Project (FERC No. 2662). The project is located on the Shetucket River in Windham County, Connecticut.

An Environmental Assessment (EA) has been prepared as part of Commission staff's review of the proposal. In the application, the licensee proposes to install a variable pitch Kaplan runner in order to comply with run-of-river operations. The project license currently authorizes the installation of a 1.026 megawatt (MW) low flow turbine, to comply with run-of-river operational requirements that would have increased the project's capacity from 2.0 MW to 3.026 MW. This EA contains Commission staff's analysis of the probable environmental impacts of the proposed amendment and concludes that approval of the proposal would not constitute a major federal action significantly affecting the quality of the human environment.

The EA is available for electronic review and reproduction at the Commission's Public Reference Room, located at 888 First Street NE., Room 2A, Washington, DC 20426. The EA may also be viewed on the Commission's Web site at *http://www.ferc.gov* using the ''eLibrary'' link. Enter the docket number (P–2662) in the docket number field to access the document. For assistance, contact FERC Online Support at *FERCOnlineSupport@ferc.gov* or toll-free at (866) 208–3372 or for TTY, (202) 502–8659.

Any comments on the EA should be filed by December 3, 2015 and should be addressed to the Secretary, Federal Energy Regulatory Commission, 888 First Street NE., Room 1–A, Washington, DC 20426. Please reference the project name and project number (P–2662–027) on all comments. Comments may be filed electronically via the Internet in lieu of paper. The Commission strongly encourages electronic filings. See 18 CFR

385.2001(a)(1)(iii) and the instructions on the Commission's Web site under the ''eFiling'' link.

For further information, contact Alicia Burtner at (202) 502–8038 or by email at *Alicia.Burtner@ferc.gov.*

Dated: November 3, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28428 Filed 11–6–15; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. EL16–4–000]

CPV Shore, LLC; Notice of Institution of Section 206 Proceeding and Refund Effective Date

On November 3, 2015, the Commission issued an order in Docket No. EL16–4–000, pursuant to section 206 of the Federal Power Act (FPA), 16 U.S.C. 824e (2012), instituting an investigation into the justness and reasonableness of CPV Shore, LLC's Reactive Power Tariff. *CPV Shore, LLC,* 153 FERC ¶ 61,139 (2015).

The refund effective date in Docket No. EL16–4–000, established pursuant to section 206(b) of the FPA, will be January 1, 2016.

Dated: November 3, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28422 Filed 11–6–15; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

Combined Notice of Filings #2

Take notice that the Commission received the following electric corporate filings:

Docket Numbers: EC16–19–000.
Applicants: Calpine Granite Holdings, LLC, Granite Ridge Energy, LLC.
Description: Calpine Granite Holdings, LLC et al submits the workpapers of Julie Solomon re the application for approval under Section 203 of the Federal Power Act etc.
Filed Date: 10/28/15.
Accession Number: 20151028–0056.
Comments Due: 5 p.m. ET 12/28/15.

Docket Numbers: EC16–22–000.
Applicants: Roosevelt Wind Project, LLC, Milo Wind Project, LLC.
Description: Application for Authorization for Disposition of Jurisdictional Facilities and Requests for Confidential Treatment and Expedited Action of Roosevelt Wind Project, LLC, and Milo Wind Project, LLC.
Filed Date: 10/30/15.
Accession Number: 20151030–5502.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: EC16–23–000.
Applicants: Prairie Rose Wind, LLC, Prairie Rose Transmission, LLC.
Description: Application of Prairie Rose Wind, LLC, et al. for Authorization Under Section 203 of the Federal Power Act, Request for Expedited Consideration and Confidential Treatment.
Filed Date: 10/30/15.
Accession Number: 20151030–5519.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: EC16–24–000.
Applicants: Chisholm View Wind Project, LLC.
Description: Application for Authorization Under Section 203 of the Federal Power Act, Request for Expedited Consideration and Confidential Treatment of Chisholm View Wind Project, LLC.
Filed Date: 10/30/15.
Accession Number: 20151030–5520.
Comments Due: 5 p.m. ET 11/20/15.

Take notice that the Commission received the following electric rate filings:

Docket Numbers: ER13–193–006.
Applicants: ISO New England Inc.
Description: Compliance filing: Amendments to ISO–NE Tariff and TOA in Compliance with October 2, 2015 Order to be effective 5/18/2015.
Filed Date: 11/2/15.
Accession Number: 20151102–5124.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER13–196–005.
Applicants: ISO New England Inc., Eversource Energy Service Company (as agent).
Description: Compliance filing: Amendments to the TOA in Compliance with October 2, 2015 Order to be effective 5/18/2015.
Filed Date: 11/2/15.
Accession Number: 20151102–5126.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER13–1908–001.
Applicants: Virginia Electric and Power Company.
Description: Notice of material change in circumstances of Virginia Electric and Power Company and its marketing affiliates.
Filed Date: 10/30/15.
Accession Number: 20151030–5507.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ER15–1825–002.
Applicants: California Independent System Operator Corporation.
Description: Compliance filing: 2015–11–02_RSI_Phase1A_Compliance Filing to be effective 1/10/2016.
Filed Date: 11/2/15.
Accession Number: 20151102–5139.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–229–000.
Applicants: Southwest Power Pool, Inc.
Description: § 205(d) Rate Filing: 2646R1 Kansas Municipal Energy Agency NITSA NOA to be effective 10/1/2015.
Filed Date: 11/2/15.
Accession Number: 20151102–5108.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–230–000.
Applicants: Southwest Power Pool, Inc.
Description: § 205(d) Rate Filing: 1067R5 ETEC NITSA; Cancellation of 1065R4 Tex-La NITA and 1066R7 NTEC NITSA to be effective 10/1/2015.
Filed Date: 11/2/15.
Accession Number: 20151102–5109.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–231–000.
Applicants: Southwest Power Pool, Inc.
Description: § 205(d) Rate Filing: 3082 Minnkota Power Cooperative, Inc. NITSA and NOA to be effective 10/1/2015.
Filed Date: 11/2/15.
Accession Number: 20151102–5123.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–232–000.
Applicants: Southwest Power Pool, Inc.
Description: § 205(d) Rate Filing: 3124 Basin Electric Power Cooperative NITSA and NOA to be effective 10/1/2015.
Filed Date: 11/2/15.
Accession Number: 20151102–5166.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–233–000.
Applicants: Illinois Power Resources Generating, LLC.
Description: § 205(d) Rate Filing: Notice of Succession for Reactive Service Rate Schedule to be effective 1/1/2016.
Filed Date: 11/2/15.
Accession Number: 20151102–5167.
Comments Due: 5 p.m. ET 11/23/15.

Take notice that the Commission received the following land acquisition reports:

Docket Numbers: LA15–3–000.
Applicants: Adelanto Solar, LLC, Adelanto Solar II, LLC, Ashtabula Wind, LLC, Ashtabula Wind II, LLC, Ashtabula Wind III, LLC, Backbone Mountain Windpower, LLC, Baldwin Wind, LLC, Bayswater Peaking Facility, LLC, Blackwell Wind, LLC, Breckinridge

Wind Project, LLC, Butler Ridge Wind Energy Center, LLC, Cimarron Wind Energy, LLC, Crystal Lake Wind, LLC, Crystal Lake Wind II, LLC, Crystal Lake Wind III, LLC, Day County Wind, LLC, Desert Sunlight 250, LLC, Desert Sunlight 300, LLC, Diablo Winds, LLC, Elk City Wind, LLC, Elk City II Wind, LLC, Energy Storage Holdings, LLC, Ensign Wind, LLC, ESI Vansycle Partners, L.P., Florida Power & Light Company, FPL Energy Burleigh County Wind, LLC, FPL Energy Cabazon Wind, LLC, FPL Energy Cape, LLC, FPL Energy Cowboy Wind, LLC, FPL Energy Green Power Wind, LLC, FPL Energy Hancock County Wind, LLC, FPL Energy Illinois Wind, LLC, FPL Energy Marcus Hook, L.P., FPL Energy MH50, L.P., FPL Energy Montezuma Wind, LLC, FPL Energy Mower County, LLC, FPL Energy New Mexico Wind, LLC, FPL Energy North Dakota Wind, LLC, FPL Energy North Dakota Wind II, LLC, FPL Energy Oklahoma Wind, LLC, FPL Energy Oliver Wind I, LLC, FPL Energy Oliver Wind II, LLC, FPL Energy Sooner Wind, LLC, FPL Energy South Dakota Wind, LLC, FPL Energy Stateline II, Inc., FPL Energy Vansycle, LLC, FPL Energy Wyman, LLC, FPL Energy Wyman IV, LLC, Garden Wind, LLC, Genesis Solar, LLC, Golden West Power Partners, LLC, Gray County Wind Energy, LLC, Green Mountain Storage, LLC, Hatch Solar Energy Center I, LLC, Hawkeye Power Partners, LLC, High Majestic Wind Energy Center, LLC, High Majestic Wind II, LLC, High Winds, LLC, Jamaica Bay Peaking Facility, LLC, Lake Benton Power Partners II, LLC, Langdon Wind, LLC, Limon Wind, LLC, Limon Wind II, LLC, Limon Wind III, LLC, Logan Wind Energy LLC, Mammoth Plains Wind Project, LLC, Mantua Creek Solar, LLC, McCoy Solar, LLC, Meyersdale Storage, LLC, Meyersdale Windpower LLC, Mill Run Windpower, LLC, Minco Wind, LLC, Minco Wind II, LLC, Minco Wind III, LLC, Minco Wind Interconnection Services, LLC, Mountain View Solar, LLC, NEPM II, LLC, NextEra Energy Duane Arnold, LLC, NextEra Energy Montezuma II Wind, LLC, NextEra Energy Point Beach, LLC, NextEra Energy Power Marketing, LLC, NextEra Energy Seabrook, LLC, NextEra Energy Services Massachusetts, LLC, Northeast Energy Associates, LP, North Jersey Energy Associates, A Limited Partnership, North Sky River Energy, LLC, Northern Colorado Wind Energy, LLC, Osceola Windpower, LLC, Osceola Windpower II, LLC, Palo Duro Wind Energy, LLC, Palo Duro Wind Interconnection Services, LLC, Paradise Solar Urban Renewal, L.L.C., Peetz Table Wind Energy, LLC, Pennsylvania Windfarms, LLC, Perrin Ranch Wind, LLC, Pheasant Run Wind, LLC, Red Mesa Wind, LLC, Seiling Wind, LLC, Seiling Wind II, LLC, Seiling Wind Interconnection Services, LLC, Silver State Solar Power South, LLC, Shafter Solar, LLC, Sky River LLC, Sky River Asset Holdings, LLC, Somerset Windpower, LLC, Steele Flats Wind Project, LLC, Story Wind, LLC, Tuscola Bay Wind, LLC, Tuscola Wind II, LLC, Vasco Winds, LLC, Waymart Wind Farm, L.P., Wessington Wind Energy Center, LLC, White Oak Energy LLC, Wilton Wind II, LLC, Windpower Partners 1993, LLC.

Description: Quarterly Land Acquisition Report of the NextEra Energy Companies.

Filed Date: 10/30/15.

Accession Number: 20151030–5508.

Comments Due: 5 p.m. ET 11/20/15.

The filings are accessible in the Commission's eLibrary system by clicking on the links or querying the docket number.

Any person desiring to intervene or protest in any of the above proceedings must file in accordance with Rules 211 and 214 of the Commission's Regulations (18 CFR 385.211 and 385.214) on or before 5:00 p.m. Eastern time on the specified comment date. Protests may be considered, but intervention is necessary to become a party to the proceeding.

eFiling is encouraged. More detailed information relating to filing requirements, interventions, protests, service, and qualifying facilities filings can be found at: *http://www.ferc.gov/docs-filing/efiling/filing-req.pdf.* For other information, call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Dated: November 2, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28396 Filed 11–6–15; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. ER16–237–000]

South Jersey Energy IS09, LLC; Supplemental Notice That Initial Market-Based Rate Filing Includes Request for Blanket Section 204 Authorization

This is a supplemental notice in the above-referenced proceeding South Jersey Energy IS09, LLC.'s application for market-based rate authority, with an accompanying rate tariff, noting that such application includes a request for blanket authorization, under 18 CFR part 34, of future issuances of securities and assumptions of liability.

Any person desiring to intervene or to protest should file with the Federal Energy Regulatory Commission, 888 First Street NE., Washington, DC 20426, in accordance with Rules 211 and 214 of the Commission's Rules of Practice and Procedure (18 CFR 385.211 and 385.214). Anyone filing a motion to intervene or protest must serve a copy of that document on the Applicant.

Notice is hereby given that the deadline for filing protests with regard to the applicant's request for blanket authorization, under 18 CFR part 34, of future issuances of securities and assumptions of liability, is November 23, 2015.

The Commission encourages electronic submission of protests and interventions in lieu of paper, using the FERC Online links at *http://www.ferc.gov.* To facilitate electronic service, persons with Internet access who will eFile a document and/or be listed as a contact for an intervenor must create and validate an eRegistration account using the eRegistration link. Select the eFiling link to log on and submit the intervention or protests.

Persons unable to file electronically should submit an original and 5 copies of the intervention or protest to the Federal Energy Regulatory Commission, 888 First Street NE., Washington, DC 20426.

The filings in the above-referenced proceeding are accessible in the Commission's eLibrary system by clicking on the appropriate link in the above list. They are also available for electronic review in the Commission's Public Reference Room in Washington, DC. There is an eSubscription link on the Web site that enables subscribers to receive email notification when a document is added to a subscribed docket(s). For assistance with any FERC Online service, please email *FERCOnlineSupport@ferc.gov.* or call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Dated: November 3, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28425 Filed 11–6–15; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

Combined Notice of Filings #2

Take notice that the Commission received the following electric rate filings:

Docket Numbers: ER13–398–000.
Applicants: The Detroit Edison Company.
Description: DTE Electric Company submits tariff filing per 35.19a(b): Refund Report to be effective N/A.
Filed Date: 11/3/15.
Accession Number: 20151103–5130.
Comments Due: 5 p.m. ET 11/24/15.

Docket Numbers: ER16–72–001.
Applicants: San Gorgonio Westwinds II—Windustries.
Description: Tariff Amendment: Amendment to 1 to be effective 11/24/2015.
Filed Date: 11/3/15.
Accession Number: 20151103–5141.
Comments Due: 5 p.m. ET 11/24/15.

Docket Numbers: ER16–206–001.
Applicants: Midcontinent Independent System Operator, Inc., ITC Midwest LLC.
Description: Tariff Amendment: 2015–11–03_SA 2862 ITC Midwest-WPL FSA Amendment (G870) to be effective 11/1/2015.
Filed Date: 11/3/15.
Accession Number: 20151103–5051.
Comments Due: 5 p.m. ET 11/24/15.

Docket Numbers: ER16–249–000.
Applicants: Eel River Power LLC.
Description: Tariff Cancellation: Cancellation of Market-Based Rate Tariff to be effective 11/4/2015.
Filed Date: 11/3/15.
Accession Number: 20151103–5049.
Comments Due: 5 p.m. ET 11/24/15.

Docket Numbers: ER16–250–000.
Applicants: ISO New England Inc., New England Power Pool Participants Committee.
Description: Section 205(d) Rate Filing: Revisions to the NCPC Credit Rules to be effective 2/1/2016.
Filed Date: 11/3/15.
Accession Number: 20151103–5164.
Comments Due: 5 p.m. ET 11/24/15.

The filings are accessible in the Commission's eLibrary system by clicking on the links or querying the docket number.

Any person desiring to intervene or protest in any of the above proceedings must file in accordance with Rules 211 and 214 of the Commission's Regulations (18 CFR 385.211 and 385.214) on or before 5:00 p.m. Eastern time on the specified comment date. Protests may be considered, but intervention is necessary to become a party to the proceeding.

eFiling is encouraged. More detailed information relating to filing requirements, interventions, protests, service, and qualifying facilities filings can be found at: *http://www.ferc.gov/docs-filing/efiling/filing-req.pdf.* For other information, call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Dated: November 3, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28419 Filed 11–6–15; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

Combined Notice of Filings #3

Take notice that the Commission received the following exempt wholesale generator filings:

Docket Numbers: EG16–15–000.
Applicants: Campbell County Wind Farm, LLC.
Description: Notice of Self-Certification of EWG of Campbell County Wind Farm, LLC.
Filed Date: 11/2/15.
Accession Number: 20151102–5195.
Comments Due: 5 p.m. ET 11/23/15.

Take notice that the Commission received the following electric rate filings:

Docket Numbers: ER10–3097–004.
Applicants: Bruce Power Inc.
Description: Supplement to June 30, 2015 Updated Market Power Analysis for the Central Region of Bruce Power Inc.
Filed Date: 10/30/15.
Accession Number: 20151030–5501.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ER16–234–000.
Applicants: Southwest Power Pool, Inc.
Description: Section 205(d) Rate Filing: 3112 WAPA—UGP Marketing Meter Agent Agreement to be effective 10/1/2015.
Filed Date: 11/2/15.
Accession Number: 20151102–5180.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–235–000.
Applicants: Illinois Power Marketing Company.
Description: Tariff Cancellation: Notice of Termination for System Support Resource Agreement to be effective 1/1/2016.
Filed Date: 11/2/15.
Accession Number: 20151102–5206.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–236–000.
Applicants: Public Service Company of Colorado.
Description: Section 205(d) Rate Filing: 2015–11–2_PSC–SPS ADIT Formula Rate Chng-Filing to be effective 1/1/2016.
Filed Date: 11/2/15.
Accession Number: 20151102–5207.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–237–000.
Applicants: South Jersey Energy ISO9, LLC.
Description: Baseline eTariff Filing: Market-Based Rate Application to be effective 11/3/2015.
Filed Date: 11/2/15.
Accession Number: 20151102–5208.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–238–000.
Applicants: South Jersey Energy ISO10, LLC.
Description: Baseline eTariff Filing: Market-Based Rate Application to be effective 11/3/2015.
Filed Date: 11/2/15.
Accession Number: 20151102–5223.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–239–000.
Applicants: Public Service Company of Colorado.
Description: Section 205(d) Rate Filing: 2015–11–02_ADIT Prorate to be effective 1/1/2016.
Filed Date: 11/2/15.
Accession Number: 20151102–5229.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–240–000.
Applicants: Alabama Power Company.
Description: Section 205(d) Rate Filing: SWE (PowerSouth Territorial) NITSA Amendment (Add CAEC Clanton-Cobblestone DP) to be effective 10/30/2015.
Filed Date: 11/2/15.
Accession Number: 20151102–5231.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–241–000.
Applicants: Southwest Power Pool, Inc.
Description: Section 205(d) Rate Filing: 3125 Basin Electric Power Cooperative NITSA and NOA to be effective 10/1/2015.
Filed Date: 11/2/15.
Accession Number: 20151102–5243.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–242–000.
Applicants: Southwest Power Pool, Inc.
Description: Section 205(d) Rate Filing: 3101 Heartland Consumers Power District NITSA and NOA to be effective 10/1/2015.
Filed Date: 11/2/15.

Accession Number: 20151102–5244.

Comments Due: 5 p.m. ET 11/23/15.

The filings are accessible in the Commission's eLibrary system by clicking on the links or querying the docket number.

Any person desiring to intervene or protest in any of the above proceedings must file in accordance with Rules 211 and 214 of the Commission's Regulations (18 CFR 385.211 and 385.214) on or before 5:00 p.m. Eastern time on the specified comment date. Protests may be considered, but intervention is necessary to become a party to the proceeding.

eFiling is encouraged. More detailed information relating to filing requirements, interventions, protests, service, and qualifying facilities filings can be found at: *http://www.ferc.gov/docs-filing/efiling/filing-req.pdf.* For other information, call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Dated: November 2, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28391 Filed 11–6–15; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. EL11–66–001]

Martha Coakley, Massachusetts Attorney General; Connecticut Public Utilities Regulatory Authority; Massachusetts Department of Public Utilities; New Hampshire Public Utilities Commission; Connecticut Office of Consumer Counsel; Maine Office of the Public Advocate; George Jepsen, Connecticut Attorney General; New Hampshire Office of Consumer Advocate; Rhode Island Division of Public Utilities and Carriers; Vermont Department of Public Service; Massachusetts Municipal Wholesale Electric Company; Associated Industries of Massachusetts; The Energy Consortium; Power Options, Inc.; and the Industrial Energy Consumer Group, v. Bangor Hydro-Electric Company; Central Maine Power Company; New England Power Company d/b/a National Grid; New Hampshire Transmission LLC d/b/a NextEra; NSTAR Electric and Gas Corporation; Northeast Utilities Service Company; The United Illuminating Company; Unitil Energy Systems, Inc. and Fitchburg Gas and Electric Light Company; Vermont Transco, LLC; Notice of Filing

Take notice that on November 2, 2015, the New England Transmission Owners (NETOs) [1] submitted tariff filing per: Refund Report to be effective N/A, pursuant to the Commission's Opinion No. 531–A, issued on October 16, 2014.[2]

Any person desiring to intervene or to protest this filing must file in accordance with Rules 211 and 214 of the Commission's Rules of Practice and Procedure (18 CFR 385.211, 385.214). Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a notice of intervention or motion to intervene, as appropriate. Such notices, motions, or protests must be filed on or before the comment date. Anyone filing a motion to intervene or protest must serve a copy of that document on the Applicant and all the parties in this proceeding.

The Commission encourages electronic submission of protests and interventions in lieu of paper using the ''eFiling'' link at *http://www.ferc.gov*. Persons unable to file electronically should submit an original and 5 copies of the protest or intervention to the Federal Energy Regulatory Commission, 888 First Street NE., Washington, DC 20426.

This filing is accessible on-line at *http://www.ferc.gov*, using the ''eLibrary'' link and is available for electronic review in the Commission's Public Reference Room in Washington, DC. There is an ''eSubscription'' link on the Web site that enables subscribers to receive email notification when a document is added to a subscribed docket(s). For assistance with any FERC Online service, please email *FERCOnlineSupport@ferc.gov*, or call (866) 208–3676 (toll free). For TTY, call (202) 502-8659.

Comment Date: 5:00 p.m. Eastern Time on November 23, 2015.

Dated: November 3, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28421 Filed 11–6–15; 8:45 am]

BILLING CODE 6717–01–P

[1] For purposes of this filing, the NETOs consist of Emera Maine (f/k/a Bangor Hydro Electric Company); Central Maine Power Company; New England Power Company d/b/a National Grid; New Hampshire Transmission LLC; Eversource Energy Service Company (on behalf of The Connecticut Light and Power Company, NSTAR Electric Company, Western Massachusetts Electric Company, and Public Service Company of New Hampshire, each doing business as Eversource Energy); The United Illuminating Company; Unitil Energy Systems, Inc. and Fitchburg Gas and Electric Light Company; and Vermont Transco LLC.

[2] *Martha Coakley, Mass. Attorney Gen., et al.* v. *Bangor Hydro-Elec. Co., et al.*, Opinion No. 531, 147 FERC ¶ 61,234 (2014) (Opinion No. 531), *order on paper hearing*, Opinion No. 531–A, 149 FERC ¶ 61,032 (2014) (Opinion No. 531–A).

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Project No. 2539–069]

Erie Boulevard Hydropower, LP; Notice of Application Accepted for Filing, Soliciting Comments, Motions To Intervene, and Protests

Take notice that the following hydroelectric application has been filed with the Commission and is available for public inspection:

a. *Type of Proceeding:* Application for Amendment of License.

b. *Project No.:* 2539–069.

c. *Date Filed:* August 31, 2015.

d. *Licensee:* Erie Boulevard Hydropower, LP.

e. *Name of Project:* School Street Hydroelectric Project.

f. *Location:* The 38.8-Megawatt (MW) School Street Hydroelectric Project is located on the Mohawk River in Albany and Saratoga Counties, New York, and does not occupy any federal lands.

g. *Filed Pursuant to:* Federal Power Act, 16 U.S.C. 791a–825r.

h. *Licensee Contact:* Ian Borlang. Compliance Manager, Erie Boulevard Hydropower, L.P., 399 Big Bay Road, Queensbury, NY 12804, Telephone: (518) 743–2093.

i. *FERC Contact:* Jennifer Polardino, (202) 502–6437, *jennifer.polardino@ferc.gov.*

j. Deadline for filing comments, interventions and protests is 30 days from the issuance date of this notice by the Commission. The Commission strongly encourages electronic filing. Please file motions to intervene, protests and comments using the Commission's eFiling system at *http://www.ferc.gov/docs-filing/efiling.asp.* Commenters can submit brief comments up to 6,000 characters, without prior registration, using the eComment system at *http://www.ferc.gov/docs-filing/ecomment.asp.* You must include your name and contact information at the end of your comments. For assistance, please contact FERC Online Support at *FERCOnlineSupport@ferc.gov,* (866) 208–3676 (toll free), or (202) 502–8659 (TTY). In lieu of electronic filing, please send a paper copy to: Secretary, Federal Energy Regulatory Commission, 888 First Street NE., Washington, DC 20426. The first page of any filing should include docket number P–2539–069.

k. *Description of Request:* The licensee proposes to amend the School Street Project license to remove approximately 3.38 acres of land from the project boundary. The land that would be removed from the boundary lies in a narrow strip along the Mohawk River extending upstream and downstream of the project's dam, opposite from the shore on which the project's powerhouse and related features are located. The licensee states that these lands are not necessary for the safe and effective operation of the project and that the removal of these lands from the project boundary would not affect operations, public infrastructure, recreational use, or environmental resources.

l. This filing may be viewed on the Commission's Web site at *http://www.ferc.gov/docs-filing/elibrary.asp.* Enter the docket number excluding the last three digits in the docket number field to access the document. You may also register online at *http://www.ferc.gov/docs-filing/esubscription.asp* to be notified via email of new filings and issuances related to this or other pending projects. For assistance, call 1–866–208–3676 or email *FERCOnlineSupport@ferc.gov,* for TTY, call (202) 502–8659. A copy is also available for inspection and reproduction in the Commission's Public Reference Room located at 888 First Street NE., Room 2A, Washington, DC 20426, or by calling (202) 502–8371.

m. Individuals desiring to be included on the Commission's mailing list should so indicate by writing to the Secretary of the Commission.

n. *Comments, Protests, or Motions to Intervene:* Anyone may submit comments, a protest, or a motion to intervene in accordance with the requirements of Rules of Practice and Procedure, 18 CFR 385.210, 385.211, 385.212 and 385.214. In determining the appropriate action to take, the Commission will consider all protests or other comments filed, but only those who file a motion to intervene in accordance with the Commission's Rules may become a party to the proceeding. Any comments, protests, or motions to intervene must be received on or before the specified comment date for the particular application. Any comments filed with the Commission prior to the date of this notice will also be considered.

o. *Filing and Service of Responsive Documents:* Any filing must (1) bear in all capital letters the title ''COMMENTS'', ''PROTEST'', or ''MOTION TO INTERVENE'' as applicable; (2) set forth in the heading the name of the applicant and the project number of the application to which the filing responds; (3) furnish the name, address, and telephone number of the person protesting or intervening; and (4) otherwise comply with the requirements of 18 CFR 385.2001 through 385.2005. All comments, motions to intervene, or protests must set forth their evidentiary basis and otherwise comply with the requirements of 18 CFR 4.34(b). All comments, motions to intervene, or protests should relate to project works which are the subject of the license amendment. Agencies may obtain copies of the application directly from the applicant. A copy of any protest or motion to intervene must be served upon each representative of the applicant specified in the particular application. If an intervener files comments or documents with the Commission relating to the merits of an issue that may affect the responsibilities of a particular resource agency, they must also serve a copy of the document on that resource agency. A copy of all other filings in reference to this application must be accompanied by proof of service on all persons listed in the service list prepared by the Commission in this proceeding, in accordance with 18 CFR 4.34(b) and 385.2010.

Dated: November 3, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28427 Filed 11–6–15; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. ER16–238–000]

South Jersey Energy IS010, LLC; Supplemental Notice That Initial Market-Based Rate Filing Includes Request for Blanket Section 204 Authorization

This is a supplemental notice in the above-referenced proceeding South Jersey Energy IS010, LLC.'s application for market-based rate authority, with an accompanying rate tariff, noting that such application includes a request for blanket authorization, under 18 CFR part 34, of future issuances of securities and assumptions of liability.

Any person desiring to intervene or to protest should file with the Federal Energy Regulatory Commission, 888 First Street NE., Washington, DC 20426, in accordance with Rules 211 and 214 of the Commission's Rules of Practice and Procedure (18 CFR 385.211 and 385.214). Anyone filing a motion to intervene or protest must serve a copy of that document on the Applicant.

Notice is hereby given that the deadline for filing protests with regard to the applicant's request for blanket authorization, under 18 CFR part 34, of future issuances of securities and assumptions of liability, is November 23, 2015.

The Commission encourages electronic submission of protests and interventions in lieu of paper, using the FERC Online links at *http://www.ferc.gov.* To facilitate electronic service, persons with Internet access who will eFile a document and/or be listed as a contact for an intervenor must create and validate an eRegistration account using the eRegistration link. Select the eFiling link to log on and submit the intervention or protests.

Persons unable to file electronically should submit an original and 5 copies of the intervention or protest to the Federal Energy Regulatory Commission, 888 First Street NE., Washington, DC 20426.

The filings in the above-referenced proceeding are accessible in the Commission's eLibrary system by clicking on the appropriate link in the above list. They are also available for electronic review in the Commission's Public Reference Room in Washington, DC. There is an eSubscription link on the Web site that enables subscribers to receive email notification when a document is added to a subscribed docket(s). For assistance with any FERC Online service, please email *FERCOnlineSupport@ferc.gov.* or call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Dated: November 3, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28426 Filed 11–6–15; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

Combined Notice of Filings—1

Take notice that the Commission has received the following Natural Gas Pipeline Rate and Refund Report filings:

Filings Instituting Proceedings

Docket Numbers: PR16–2–000.
Applicants: Pacific Gas and Electric Company.
Description: Submits tariff filing per 284.123(b)(1) & (g),: eTariff System Migration: Refile Existing Records from Tariff ID 9000 to 9100 to be effective 10/26/2015; Filing Type: 1330.
Filed Date: 10/26/15.
Accession Number: 20151026–5412.
Comments Due: 5 p.m. ET 11/16/15.
284.123(g) Protests Due: 5 p.m. ET 12/28/15.

Docket Numbers: PR16–3–000.
Applicants: Pacific Gas and Electric Company.
Description: Submits tariff filing per 284.123(g)/.224: eTariff System Migration: Cancellation of Tariff ID 9000 to be effective 10/26/2015; Filing Type: 1290.
Filed Date: 10/26/15.
Accession Number: 20151026–5418.
Comments Due: 5 p.m. ET 11/16/15.
284.123(g) Protests Due: 5 p.m. ET 12/28/15.

Docket Numbers: RP16–72–000.
Applicants: Texas Eastern Transmission, LP.
Description: Section 4(d) Rate Filing: Negotiated Rates—BP Energy contracts 911301 and 911302 to be effective 11/1/2015.
Filed Date: 10/26/15.
Accession Number: 20151026–5341.
Comments Due: 5 p.m. ET 11/9/15.

Docket Numbers: RP16–73–000.
Applicants: Natural Gas Pipeline Company of America.
Description: Section 4(d) Rate Filing: Shell Energy Negotiated Rate to be effective 11/1/2015.
Filed Date: 10/27/15.
Accession Number: 20151027–5144.
Comments Due: 5 p.m. ET 11/9/15.

Docket Numbers: RP16–74–000.
Applicants: Natural Gas Pipeline Company of America.
Description: Section 4(d) Rate Filing: Tenaska Marketing Negotiated Rate to be effective 11/1/2015.
Filed Date: 10/27/15.
Accession Number: 20151027–5150.
Comments Due: 5 p.m. ET 11/9/15.

Docket Numbers: RP16–75–000.
Applicants: Natural Gas Pipeline Company of America.
Description: Section 4(d) Rate Filing: Occidental Energy Negotiated Rate to be effective 11/1/2015.
Filed Date: 10/27/15.
Accession Number: 20151027–5157.
Comments Due: 5 p.m. ET 11/9/15.

Docket Numbers: RP16–76–000.
Applicants: Iroquois Gas Transmission System, L.P.
Description: Section 4(d) Rate Filing: 10/27/15 Negotiated Rates—MMGS Inc. (HUB) 7625–89 to be effective 11/1/2015.
Filed Date: 10/27/15.
Accession Number: 20151027–5232.
Comments Due: 5 p.m. ET 11/9/15.

Docket Numbers: RP16–77–000.
Applicants: Iroquois Gas Transmission System, L.P.
Description: Section 4(d) Rate Filing: 10/27/15 Negotiated Rates—Emera Energy Services, Inc. (HUB) 2715–89 to be effective 11/1/2015.
Filed Date: 10/27/15.
Accession Number: 20151027–5244.
Comments Due: 5 p.m. ET 11/9/15.

Docket Numbers: RP16–78–000.
Applicants: Natural Gas Pipeline Company of America.
Description: Section 4(d) Rate Filing: Munich Re Trading Negotiated Rate to be effective 11/1/2015.
Filed Date: 10/27/15.
Accession Number: 20151027–5247.
Comments Due: 5 p.m. ET 11/9/15.

Docket Numbers: RP16–79–000.
Applicants: Transcontinental Gas Pipe Line Company.
Description: Compliance filing 2015 Penalty Sharing Report.
Filed Date: 10/28/15.
Accession Number: 20151028–5116.
Comments Due: 5 p.m. ET 11/9/15.

Docket Numbers: RP16–80–000.
Applicants: MIGC LLC.
Description: Section 4(d) Rate Filing: Quality Spec Change (CO2) to be effective 12/1/2015.
Filed Date: 10/28/15.
Accession Number: 20151028–5118.
Comments Due: 5 p.m. ET 11/9/15.

Docket Numbers: RP16–81–000.
Applicants: Iroquois Gas Transmission System, L.P.
Description: Section 4(d) Rate Filing: 10/28/15 Negotiated Rates—Mercuria Energy Gas Trading LLC (HUB) 7540–89 to be effective 11/1/2015.
Filed Date: 10/28/15.
Accession Number: 20151028–5168.
Comments Due: 5 p.m. ET 11/9/15.

Docket Numbers: RP16–82–000.
Applicants: Iroquois Gas Transmission System, L.P.
Description: Section 4(d) Rate Filing: 10/28/15 Negotiated Rates—Mercuria Energy Gas Trading LLC (RTS) 7540–02 to be effective 11/1/2015.
Filed Date: 10/28/15.
Accession Number: 20151028–5174.
Comments Due: 5 p.m. ET 11/9/15.

Docket Numbers: RP16–83–000.
Applicants: Texas Eastern Transmission, LP.
Description: Section 4(d) Rate Filing: Negotiated Rate—Chevron TEAM2014 Release to Sequent 8938943 to be effective 11/1/2015
Filed Date: 10/28/15.
Accession Number: 20151028–5181.
Comments Due: 5 p.m. ET 11/9/15.

Docket Numbers: RP16–84–000.
Applicants: Algonquin Gas Transmission, LLC.
Description: Section 4(d) Rate Filing: AGT FRQ 2015 FILING to be effective 12/1/2015.
Filed Date: 10/28/15.
Accession Number: 20151028–5256.
Comments Due: 5 p.m. ET 11/9/15.

Docket Numbers: RP16–85–000.
Applicants: Transcontinental Gas Pipe Line Company
Description: Section 4(d) Rate Filing: Negotiated Rates—Cherokee AGL—Replacement Shippers—Nov 2015 to be effective 11/1/2015.
Filed Date: 10/28/15.
Accession Number: 20151028–5279.
Comments Due: 5 p.m. ET 11/9/15.

Docket Numbers: RP16–86–000.
Applicants: Northwest Pipeline LLC.
Description: Section 4(d) Rate Filing: NWP Non-Conforming Service Agreement Filing—Northwest Natural to be effective 11/1/2015.
Filed Date: 10/28/15.
Accession Number: 20151028–5298.
Comments Due: 5 p.m. ET 11/9/15.

Docket Numbers: RP16–87–000.
Applicants: Iroquois Gas Transmission System, L.P.
Description: Section 4(d) Rate Filing: 10/28/15 Negotiated Rates—Freepoint Commodites LLC (RTS) 7250–14 to be effective 11/1/2015.

Filed Date: 10/28/15.

Accession Number: 20151028–5320.

Comments Due: 5 p.m. ET 11/9/15.

Docket Numbers: RP16–88–000.

Applicants: Iroquois Gas Transmission System, L.P.

Description: Section 4(d) Rate Filing: 10/28/15 Negotiated Rates—ConEdison Energy Inc. (HUB) 2275–89 to be effective 11/1/2015.

Filed Date: 10/28/15.

Accession Number: 20151028–5324.

Comments Due: 5 p.m. ET 11/9/15.

Docket Numbers: RP16–89–000.

Applicants: Guardian Pipeline, L.L.C.

Description: Section 4(d) Rate Filing: Revisions to Exhibit A of FT–1 and FT–2 Form of Service Agreements to be effective 11/1/2015.

Filed Date: 10/28/15.

Accession Number: 20151028–5334.

Comments Due: 5 p.m. ET 11/9/15.

Docket Numbers: RP16–90–000.

Applicants: Iroquois Gas Transmission System, L.P.

Description: Section 4(d) Rate Filing: 10/28/15 Negotiated Rates—Sequent Energy Management (HUB) 3075–89 to be effective 11/1/2015.

Filed Date: 10/28/15.

Accession Number: 20151028–5337.

Comments Due: 5 p.m. ET 11/9/15.

The filings are accessible in the Commission's eLibrary system by clicking on the links or querying the docket number.

Any person desiring to intervene or protest in any of the above proceedings must file in accordance with Rules 211 and 214 of the Commission's Regulations (18 CFR 385.211 and 385.214) on or before 5:00 p.m. Eastern time on the specified date(s). Protests may be considered, but intervention is necessary to become a party to the proceeding.

eFiling is encouraged. More detailed information relating to filing requirements, interventions, protests, service, and qualifying facilities filings can be found at: *http://www.ferc.gov/docs-filing/efiling/filing-req.pdf.* For other information, call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Dated: November 2, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28398 Filed 11–6–15; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

Combined Notice of Filings #1

Take notice that the Commission received the following electric rate filings:

Docket Numbers: ER10–3297–007.
Applicants: Powerex Corp.
Description: Notice of Non-Material Change in Status of Powerex Corp.
Filed Date: 10/30/15.
Accession Number: 20151030–5475.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ER14–2553–003.
Applicants: Southwest Power Pool, Inc.
Description: Compliance filing: Long-Term Congestion Rights Compliance Filing in ER14–2553 to be effective 2/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5441.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ER16–211–000.
Applicants: Pacific Gas and Electric Company.
Description: Section 205(d) Rate Filing: Quarterly Filing of City and County of San Francisco's WDT SA 275 for Q3 2015 to be effective 1/1/2016.
Filed Date: 10/30/15.
Accession Number: 20151030–5432.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ER16–212–000.
Applicants: Black Hills/Colorado Electric Utility Company, LP.
Description: Section 205(d) Rate Filing: Joint Dispatch Transmission Service to be effective 1/1/2016.
Filed Date: 10/30/15.
Accession Number: 20151030–5439.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ER16–213–000.
Applicants: Midcontinent Independent System Operator, Inc.
Description: Section 205(d) Rate Filing: 2015–10–30 RSG/RNU Netting Filing to be effective 1/15/2016.
Filed Date: 10/30/15.
Accession Number: 20151030–5440.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ER16–214–000.
Applicants: New England Power Pool Participants Committee.
Description: Section 205(d) Rate Filing: 128th Agreement to be effective 11/1/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5444.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ER16–215–000.
Applicants: Entergy Louisiana, LLC.
Description: Baseline eTariff Filing: Notice of Succession—System Agreement to be effective 10/30/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5445.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ER16–216–000.
Applicants: New York State Electric & Gas Corporation.
Description: Section 205(d) Rate Filing: NYSEG–DCEC Attachment C Annual update to be effective 1/1/2016.
Filed Date: 10/30/15.
Accession Number: 20151030–5446.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ER16–217–000.
Applicants: Black Hills/Colorado Electric Utility Company, LP.
Description: Section 205(d) Rate Filing: Joint Dispatch Agreement Concurrence Filing to be effective 1/1/2016.
Filed Date: 10/30/15.
Accession Number: 20151030–5448.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ER16–218–000.
Applicants: Entergy Louisiana, LLC.
Description: Baseline eTariff Filing: Notice of Succession—Other to be effective 10/30/2015.
Filed Date: 10/30/15.
Accession Number: 20151030–5449.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ER16–219–000.
Applicants: California Power Exchange Corporation.
Description: Section 205(d) Rate Filing: Rate Filing for Rate Period 28 to be effective 1/1/2016.
Filed Date: 11/2/15.
Accession Number: 20151102–5000.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–220–000.
Applicants: Entergy Louisiana, LLC.
Description: Section 205(d) Rate Filing: SRMPA 4th Extension of Interim Agreement to be effective 11/1/2015.
Filed Date: 11/2/15.
Accession Number: 20151102–5003.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–221–000.
Applicants: Entergy Louisiana, LLC.
Description: Compliance filing: ELL MBR Tariff to be effective 10/30/2015.
Filed Date: 11/2/15.
Accession Number: 20151102–5004.
Comments Due: 5 p.m. ET 11/23/15.

Docket Numbers: ER16–222–000.
Applicants: ISO New England Inc.
Description: ISO New England Inc. Resource Termination—Brookfield White Pine Hydro LLC.
Filed Date: 10/30/15.
Accession Number: 20151030–5473.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ER16–223–000.
Applicants: ISO New England Inc.
Description: ISO New England Inc. Resource Termination—Twin Eagle Resource Management.

Filed Date: 10/30/15.
Accession Number: 20151030–5474.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ER16–224–000.
Applicants: ISO New England Inc.
Description: ISO New England Inc. Resource Termination—Direct Energy Business Management.
Filed Date: 10/30/15.
Accession Number: 20151030–5477.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ER16–225–000.
Applicants: ISO New England Inc.
Description: ISO New England Inc. Resource Termination of Enerwise Global Technologies, Inc.
Filed Date: 10/30/15.
Accession Number: 20151030–5478.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ER16–226–000.
Applicants: ISO New England Inc.
Description: ISO New England Inc. Resource Termination—Green Mountain Power Corporation.
Filed Date: 10/30/15.
Accession Number: 20151030–5479.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ER16–227–000.
Applicants: Entergy Arkansas, Inc., Entergy Louisiana, LLC, Entergy Mississippi, Inc., Entergy New Orleans, Inc., Entergy Texas, Inc.
Description: Application of Entergy Services, Inc. on behalf of Entergy Arkansas, Inc., et al. to use current Intangible Plant amortization rates and updated depreciation rates for Transmission Plant and General Plant in transmission formula rates.
Filed Date: 10/30/15.
Accession Number: 20151030–5497.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ER16–228–000.
Applicants: Southwest Power Pool, Inc.
Description: Section 205(d) Rate Filing: 3113 Basin Electric and Montana-Dakota Utilities At AO to be effective 10/1/2015.
Filed Date: 11/2/15.
Accession Number: 20151102–5105.
Comments Due: 5 p.m. ET 11/23/15.

Take notice that the Commission received the following electric securities filings:

Docket Numbers: ES16–4–000.
Applicants: AEP Generating Company.
Description: Application Under Section 204 of the Federal Power Act for Authorization of AEP Generating Company to Issue Securities.
Filed Date: 10/30/15.
Accession Number: 20151030–5484.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ES16–5–000.
Applicants: Baltimore Gas and Electric Company.
Description: Application of Baltimore Gas and Electric Company Under Section 204 of the Federal Power Act for Authorization of the Issuance Securities.
Filed Date: 10/30/15.
Accession Number: 20151030–5485.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ES16–6–000.
Applicants: Commonwealth Edison Company.
Description: Application of Commonwealth Edison Company Under Section 204 of the Federal Power Act for Authorization of the Issuance Securities.
Filed Date: 10/30/15.
Accession Number: 20151030–5486.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: ES16–7–000.
Applicants: PECO Energy Company.
Description: Application of PECO Energy Company Under Section 204 of the Federal Power Act for Authorization of the Issuance Securities.
Filed Date: 10/30/15.
Accession Number: 20151030–5487.
Comments Due: 5 p.m. ET 11/20/15.

Take notice that the Commission received the following land acquisition reports:

Docket Numbers: LA15–3–000.
Applicants: AV Solar Ranch 1, LLC, Baltimore Gas and Electric Company, Beebe 1B Renewable Energy, LLC, Beebe Renewable Energy, LLC, Calvert Cliffs Nuclear Power Plant, LLC, Cassia Gulch Wind Park LLC, CER Generation, LLC, Commonwealth Edison Company, Constellation Energy Commodities Group Maine, LLC, Constellation Energy Services of New York, Inc, Constellation Energy Services, Inc., Constellation Mystic Power, LLC, Constellation NewEnergy, Inc., Constellation Power Source Generation, LLC, Cow Branch Wind Power, L.L.C., CR Clearing, LLC, Criterion Power Partners, LLC, Exelon Framingham, LLC, Exelon Generation Company, LLC, Exelon New Boston, LLC, Exelon West Medway, LLC, Exelon Wind 4, LLC, Exelon Wyman, LLC, Fair Wind Power Partners, LLC, Fourmile Wind Energy, LLC, Handsome Lake Energy, LLC, Harvest WindFarm, LLC, Harvest Windfarm II, LLC, High Mesa Energy, LLC, Michigan Wind 1, LLC, Michigan Wind 2, LLC, Nine Mile Point Nuclear Station, LLC, PECO Energy Company, R.E. Ginna Nuclear Power Plant, LLC, Shooting Star Wind Project, LLC, Tuana Springs Energy, LLC, Wind Capital Holdings, LLC, Wildcat Wind, LLC, 2014 ESA Project Company, LLC, 2015 ESA Project Company, LLC.
Description: Quarterly Land Acquisition Report of the Exelon MBR Entities, 2014 ESA Project Company, LLC and 2015 ESA Project Company, LLC.
Filed Date: 10/30/15.
Accession Number: 20151030–5481.
Comments Due: 5 p.m. ET 11/20/15.

Docket Numbers: LA15–3–000.
Applicants: Solar Star California XIII, LLC, Solar Star Colorado III, LLC.
Description: Quarterly Land Acquisition Report of the Solar Star Companies.
Filed Date: 10/30/15.
Accession Number: 20151030–5482.
Comments Due: 5 p.m. ET 11/20/15.

The filings are accessible in the Commission's eLibrary system by clicking on the links or querying the docket number.

Any person desiring to intervene or protest in any of the above proceedings must file in accordance with Rules 211 and 214 of the Commission's Regulations (18 CFR 385.211 and 385.214) on or before 5:00 p.m. Eastern time on the specified comment date. Protests may be considered, but intervention is necessary to become a party to the proceeding.

eFiling is encouraged. More detailed information relating to filing requirements, interventions, protests, service, and qualifying facilities filings can be found at: *http://www.ferc.gov/docs-filing/efiling/filing-req.pdf.* For other information, call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Dated: November 2, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28390 Filed 11–6–15; 8:45 am]
BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. EL16–8–000]

East Kentucky Power Cooperative, Inc. v. Louisville Gas and Electric Company/Kentucky Utilities Company; Notice of Complaint

Take notice that on November 2, 2015, pursuant to sections 206, 211 and 306 of the Federal Power Act, 16 U.S.C. 824e, 824j–1 and 825e (2006) and Rule 206 of the Federal Energy Regulatory Commission's (Commission) Rules of Practice and Procedure, 18 CFR 385.206 (2015), East Kentucky Power Cooperative, Inc. (East Kentucky or Complainant) filed a complaint against Louisville Gas and Electric Company/Kentucky Utilities Company (LKE or Respondents) alleging that LKE's failure to accept East Kentucky's designation of new Network Load under the East Kentucky-LKE Network Service

Agreement is contrary to the terms of the LKE Open Access Transmission Tariff and the Commission's policies concerning open access and transmission pricing, all as more fully explained in the complaint.

The Complainant certifies that copies of the complaint were served on the contacts for the Respondent as listed on the Commission's list of corporate officials.

Any person desiring to intervene or to protest this filing must file in accordance with Rules 211 and 214 of the Commission's Rules of Practice and Procedure (18 CFR 385.211, 385.214). Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a notice of intervention or motion to intervene, as appropriate. The Respondent's answer and all interventions, or protests must be filed on or before the comment date. The Respondent's answer, motions to intervene, and protests must be served on the Complainants.

The Commission encourages electronic submission of protests and interventions in lieu of paper using the ''eFiling'' link at *http://www.ferc.gov.* Persons unable to file electronically should submit an original and 5 copies of the protest or intervention to the Federal Energy Regulatory Commission, 888 First Street NE., Washington, DC 20426.

This filing is accessible on-line at *http://www.ferc.gov,* using the ''eLibrary'' link and is available for electronic review in the Commission's Public Reference Room in Washington, DC. There is an ''eSubscription'' link on the Web site that enables subscribers to receive email notification when a document is added to a subscribed docket(s). For assistance with any FERC Online service, please email *FERCOnlineSupport@ferc.gov,* or call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Comment Date: 5:00 p.m. Eastern Time on November 23, 2015.

Dated: November 3, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28423 Filed 11–6–15; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. RM98–1–000]

Records Governing Off-the-Record Communications; Public Notice

This constitutes notice, in accordance with 18 CFR 385.2201(b), of the receipt of prohibited and exempt off-the-record communications.

Order No. 607 (64 FR 51222, September 22, 1999) requires Commission decisional employees, who make or receive a prohibited or exempt off-the-record communication relevant to the merits of a contested proceeding, to deliver to the Secretary of the Commission, a copy of the communication, if written, or a summary of the substance of any oral communication.

Prohibited communications are included in a public, non-decisional file associated with, but not a part of, the decisional record of the proceeding. Unless the Commission determines that the prohibited communication and any responses thereto should become a part of the decisional record, the prohibited off-the-record communication will not be considered by the Commission in reaching its decision. Parties to a proceeding may seek the opportunity to respond to any facts or contentions made in a prohibited off-the-record communication, and may request that the Commission place the prohibited communication and responses thereto in the decisional record. The Commission will grant such a request only when it determines that fairness so requires. Any person identified below as having made a prohibited off-the-record communication shall serve the document on all parties listed on the official service list for the applicable proceeding in accordance with Rule 2010, 18 CFR 385.2010.

Exempt off-the-record communications are included in the decisional record of the proceeding, unless the communication was with a cooperating agency as described by 40 CFR 1501.6, made under 18 CFR 385.2201(e)(1)(v).

The following is a list of off-the-record communications recently received by the Secretary of the Commission. The communications listed are grouped by docket numbers in ascending order. These filings are available for electronic review at the Commission in the Public Reference Room or may be viewed on the Commission's Web site at *http://www.ferc.gov* using the eLibrary link. Enter the docket number, excluding the last three digits, in the docket number field to access the document. For assistance, please contact FERC Online Support at *FERCOnlineSupport@ferc.gov* or toll free at (866) 208–3676, or for TTY, contact (202) 502–8659.

Docket No.	File date	Presenter or requester
Prohibited:		
1. CP14–554–000, CP15–16–000, CP15–17–000	10–26–15	Susan VanBrunt.
Exempt:		
1. CP14–96–000	10–21–15	Members of Congress.[1]
2. CP15–115–000	10–22–15	U.S. Senators.[2]
3. CP15–558–000	10–26–15	Delaware Township, NJ.
4. CP15–17–000	10–26–15	Members of Congress.[3]
5. CP15–17–000	10–27–15	WWALS Watershed Coalition, Inc.

[1] Nita M. Lowey and Eliot L. Engel.

[2] Charles E. Schumer and Kirsten Gillibrand.

[3] Sanford D. Bishop, Jr., John Lewis, Henry C. ''Hank'' Johnson, Jr., David Scott.

Dated: November 2, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28395 Filed 11–6–15; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Project No. 14718–000]

Grafton Hydro, LLC; Notice of Preliminary Permit Application Accepted for Filing and Soliciting Comments, Motions To Intervene, and Competing Applications

On October 9, 2015, Grafton Hydro, LLC filed an application for a preliminary permit, pursuant to section 4(f) of the Federal Power Act (FPA), proposing to study the feasibility of the Lebanon-Mascoma Hydroelectric Project (Lebanon-Mascoma Project or project) to be located on Mascoma River in the city of Lebanon, Grafton County, New Hampshire. The sole purpose of a preliminary permit, if issued, is to grant the permit holder priority to file a license application during the permit term. A preliminary permit does not authorize the permit holder to perform any land-disturbing activities or otherwise enter upon lands or waters owned by others without the owners' express permission.

The proposed project would include two developments. Development 1 would be located near the downtown section of the city of Lebanon and Development 2 would be located at the existing Mascoma Lake dam. Development 1 would consist of: (1) A new 110-foot-long, reinforced concrete dam with a 60-foot-long, bottom-hinged, operable crest spillway; (2) a new impoundment with a surface area of less than 2 acres and a normal volume of less than 10 acre-feet; (3) a 1,200-foot-long, 7-foot-diameter, steel penstock; (4) a new 40-foot-long, 30-foot-wide, reinforced concrete powerhouse containing a new 2,000-horsepower Kaplan-type turbine and a new 1,500-kilowatt (kW) synchronous generator; (5) an approximately 500-foot-long transmission line connecting the generator to a 2.0 kilovolt amps (kVA) transformer; and (6) appurtenant facilities.

Development 2 would consist of: (1) The existing 18-foot-high, 575-foot-long concrete gravity Mascoma Lake dam with four 6-foot-wide outlet gates, seven 35-foot-wide stoplog bays, and a 125-foot-long overflow spillway; (2) the existing 1,158-acre Mascoma Lake impoundment; (3) a new 40-foot-long, 30-foot-wide, reinforced concrete powerhouse containing four 150-horsepower, horizontal axis, propeller-type turbines, each with a 150-kW asynchronous generator; (4) an approximately 500-foot-long transmission line connecting the generators to a 1.0-kVA transformer; and (5) appurtenant facilities. The estimated annual generation of the project would be 6,500 megawatt-hours. The existing Mascoma Lake dam and impoundment are owned and operated by the New Hampshire Department of Environmental Services.

Applicant Contact: Mr. Thomas Tarpey, Grafton Hydro, LLC, 55 Union Street, 4th Floor, Boston, MA 02108; phone: (617) 710–1114.

FERC Contact: Bill Connelly; phone: (202) 502–8587 or email: *william.connelly@ferc.gov.*

Deadline for filing comments, motions to intervene, competing applications (without notices of intent), or notices of intent to file competing applications: 60 days from the issuance of this notice. Competing applications and notices of intent must meet the requirements of 18 CFR 4.36.

The Commission strongly encourages electronic filing. Please file comments, motions to intervene, notices of intent, and competing applications using the Commission's eFiling system at *http://www.ferc.gov/docs-filing/efiling.asp.* Commenters can submit brief comments up to 6,000 characters, without prior registration, using the eComment system at *http://www.ferc.gov/docs-filing/ecomment.asp.* You must include your name and contact information at the end of your comments. For assistance, please contact FERC Online Support at *FERCOnlineSupport@ferc.gov,* (866) 208–3676 (toll free), or (202) 502–8659 (TTY). In lieu of electronic filing, please send a paper copy to: Secretary, Federal Energy Regulatory Commission, 888 First Street NE., Washington, DC 20426. The first page of any filing should include docket number P–14718–000.

More information about this project, including a copy of the application, can be viewed or printed on the ''eLibrary'' link of the Commission's Web site at *http://www.ferc.gov/docs-filing/elibrary.asp.* Enter the docket number (P–14718) in the docket number field to access the document. For assistance, contact FERC Online Support.

Dated: November 2, 2015.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2015–28394 Filed 11–6–15; 8:45 am]

BILLING CODE 6717–01–P

ENVIRONMENTAL PROTECTION AGENCY

[9936–75–Region 1]

Proposed CERCLA Administrative Cost Recovery Settlement; RBF Frozen Desserts, LLC, RBF Frozen Desserts Site, West Hartford, Connecticut

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of proposed settlement; request for public comments.

SUMMARY: In accordance with Section 122(i) of the Comprehensive Environmental Response Compensation, and Liability Act, as amended (''CERCLA''), 42 U.S.C. Section 9622(i), notice is hereby given of a proposed administrative settlement for recovery of response costs under CERCLA Sections 122(h) and 104(e), concerning the RBF Frozen Desserts Superfund Site in West Hartford, Connecticut with the following settling party: RBF Frozen Desserts, LLC. The settlement requires the RBF Frozen Desserts, LLC to pay $122,518.89 to the Hazardous Substance Superfund, with interest.

For 30 days following the date of publication of this notice, the Agency will receive written comments relating to the settlement. The United States will consider all comments received and may modify or withdraw its consent to the settlement if comments received disclose facts or considerations which indicate that the settlement is inappropriate, improper, or inadequate. The Agency's response to any comments received will be available for public inspection at 5 Post Office Square, Boston, MA 02109–3912.

DATES: Comments must be submitted by December 9, 2015.

ADDRESSES: Comments should be addressed to Michelle Lauterback, Senior Enforcement Counsel, U.S. Environmental Protection Agency, 5 Post Office Square, Suite 100 (OES04–1), Boston, MA 02109–3912 (Telephone No. 617–918–1774), *lauterback.michelle@epa.gov,* and should refer to: In re: RBF Frozen Desserts Superfund Site, U.S. EPA Docket No. 01–2015–0071.

FOR FURTHER INFORMATION CONTACT: A copy of the proposed settlement may be obtained from Michelle Lauterback, Senior Enforcement Counsel, U.S. Environmental Protection Agency, 5 Post Office Square, Suite 100 (OES04–1), Boston, MA 02109–3912; (617) 918–1774; *lauterback.michelle@epa.gov.*

SUPPLEMENTARY INFORMATION: This proposed administrative settlement for recovery of response costs under

CERCLA Sections 122(h)(1) and 104(e)(6), concerning the RBF Frozen Desserts Superfund Site in West Hartford, Connecticut, requires the settling party, RBF Frozen Desserts, LLC to pay $122,518.89, with interest, to the Hazardous Substance Superfund. The settlement includes a covenant not to sue pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. 9606 and 9607, relating to the Site, and protection from contribution actions or claims as provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. 9613(f)(2) and 9622(h)(4). The settlement has been approved by the Environmental and Natural Resources Division of the United States Department of Justice.

Dated: October 26, 2015.

Nancy Barmakian,

Acting Director, Office of Site Remediation and Restoration.

[FR Doc. 2015–28496 Filed 11–6–15; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[FRL–9936–76–Region 6]

Underground Injection Control Program; Hazardous Waste Injection Restrictions; Petition for Exemption Reissuance—Class I Hazardous Waste Injection; DuPont Pontchartrain, LaPlace, Louisiana

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of a final decision on a no migration petition reissuance.

SUMMARY: Notice is hereby given that a reissuance of an exemption to the land disposal Restrictions, under the 1984 Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act, has been granted to DuPont for three Class I hazardous injection wells located at their Pontchartrain site located in LaPlace, Louisiana. The company has adequately demonstrated to the satisfaction of the Environmental Protection Agency by the petition reissuance application and supporting documentation that, to a reasonable degree of certainty, there will be no migration of hazardous constituents from the injection zone for as long as the waste remains hazardous. This final decision allows the continued underground injection by DuPont, of the specific restricted hazardous wastes identified in this exemption reissuance, into Class I hazardous waste injection Wells 4, 7 and 8 until December 31, 2050, unless EPA moves to terminate this exemption. Additional conditions included in this final decision may be reviewed by contacting the Region 6 Ground Water/UIC Section. A public notice was issued August 19, 2015, and the public comment period closed on October 5, 2015. No comments were received. This decision constitutes final Agency action and there is no Administrative appeal. This decision may be reviewed/appealed in compliance with the Administrative Procedure Act.

DATES: This action is effective as of October 22, 2015.

ADDRESSES: Copies of the petition reissuance and all pertinent information relating thereto are on file at the following location:

Environmental Protection Agency, Region 6, Water Quality Protection Division, Source Water Protection Branch (6WQ–S), 1445 Ross Avenue, Dallas, Texas 75202–2733.

FOR FURTHER INFORMATION CONTACT: Philip Dellinger, Chief Ground Water/UIC Section, EPA—Region 6, telephone (214) 665–8324.

Dated: October 22, 2015.

William K. Honker,

P.E., Director, Water Quality Protection Division.

[FR Doc. 2015–28484 Filed 11–6–15; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[EPA–HQ–OAR–2014–0128; FRL–9936–85–OAR]

Release of Draft Integrated Review Plan for the Secondary National Ambient Air Quality Standard for Oxides of Nitrogen and Oxides of Sulfur

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of availability and public comment period.

SUMMARY: The Environmental Protection Agency (EPA) is announcing the availability, for public review, the draft document titled *Draft Integrated Review Plan for the Secondary National Ambient Air Quality Standard for Oxides of Nitrogen and Oxides of Sulfur* (draft IRP). This document contains the plans for the review of the air quality criteria for oxides of nitrogen and oxides of sulfur and the secondary national ambient air quality standards (NAAQS) for oxides of nitrogen and oxides of sulfur (NO_X/SO_X). The secondary NO_X/SO_X NAAQS provide for the protection of public welfare from exposure to NO_X and SO_X in ambient air.

DATES: The draft IRP was made available on October 30, 2015. Comments must be received on or before December 30, 2015.

ADDRESSES: This document will be available primarily via the Internet at the following Web site: *http://www.epa.gov/ttn/naaqs/standards/no2so2sec/2013_fr.html.* Submit your comments, identified by Docket ID No. EPA–HQ–OAR–2014–0128, to the *Federal eRulemaking Portal: http://www.regulations.gov.* Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or withdrawn. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (*i.e.* on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit *http://www2.epa.gov/dockets/commenting-epa-dockets.*

FOR FURTHER INFORMATION CONTACT: Ginger Tennant, Office of Air Quality Planning and Standards (mail code C504–06), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711; telephone number: 919–541–4072; fax number: 919–541–0237; email address: *tennant.ginger@epa.gov.*

SUPPLEMENTARY INFORMATION:

I. General Information

A. What should I consider as I prepare my comments for the EPA?

1. *Submitting CBI.* Do not submit this information to the EPA through *www.regulations.gov* or email. Clearly mark the part or all of the information that you claim to be CBI. For CBI information in a disk or CD ROM that you mail to the EPA, mark the outside of the disk or CD ROM as CBI and then identify electronically within the disk or CD ROM the specific information that is claimed as CBI. In addition to one complete version of the comment that

includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2.

2. *Tips for Preparing Your Comments.* When submitting comments, remember to:

• Identify the rulemaking by docket number and other identifying information (subject heading, **Federal Register** date and page number).

• Follow directions—The agency may ask you to respond to specific questions or organize comments by referencing a Code of Federal Regulations (CFR) part or section number.

• Explain why you agree or disagree; suggest alternatives and substitute language for your requested changes.

• Describe any assumptions and provide any technical information and/or data that you used.

• If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow for it to be reproduced.

• Provide specific examples to illustrate your concerns, and suggest alternatives.

• Explain your views as clearly as possible, avoiding the use of profanity or personal threats.

• Make sure to submit your comments by the comment period deadline identified.

II. Information Specific to This Document

Two sections of the Clean Air Act (CAA) govern the establishment and revision of the NAAQS. Section 108 (42 U.S.C. 7408) directs the Administrator to identify and list certain air pollutants and then to issue air quality criteria for those pollutants. The Administrator is to list those air pollutants that in her ''judgment, cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare;'' ''the presence of which in the ambient air results from numerous or diverse mobile or stationary sources;'' and ''for which . . . [the Administrator] plans to issue air quality criteria . . . .'' Air quality criteria are intended to ''accurately reflect the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health or welfare which may be expected from the presence of [a] pollutant in the ambient air . . .'' 42 U.S.C. 7408(b). Under section 109 (42 U.S.C. 7409), the EPA establishes primary (health-based) and secondary (welfare-based) NAAQS for pollutants for which air quality criteria are issued. Section 109(d) requires periodic review and, if appropriate, revision of existing air quality criteria. The revised air quality criteria reflect advances in scientific knowledge on the effects of the pollutant on public health or welfare. The EPA is also required to periodically review and, if appropriate, revise the NAAQS based on the revised criteria. Section 109(d)(2) requires that an independent scientific review committee ''shall complete a review of the criteria . . . and the national primary and secondary ambient air quality standards . . . and shall recommend to the Administrator any new . . . standards and revisions of existing criteria and standards as may be appropriate . . . .'' Since the early 1980's, this independent review function has been performed by the Clean Air Scientific Advisory Committee (CASAC).

Presently, the EPA is reviewing the secondary NAAQS for NO_X/SO_X.[1] The draft document, announced today, has been developed as part of the planning phase for the review. This phase began with a science policy workshop to identify issues and questions to frame the review.[2] Drawing from the workshop discussions, this draft IRP was prepared jointly by EPA's National Center for Environmental Assessment, within the Office of Research and Development, and EPA's Office of Air Quality Planning and Standards, within the Office of Air and Radiation. The draft IRP will be reviewed by CASAC at a teleconference on December 1, 2015. The final IRP will include consideration of CASAC and public comments received on this draft IRP. This document also presents the current plan and specifies the schedule for the entire review, the process for conducting the review, and the key policy-relevant science issues that will guide the review.

Dated: November 3, 2015.

Mary Henigin,

Acting Director, Office of Air Quality Planning and Standards.

[FR Doc. 2015–28487 Filed 11–6–15; 8:45 am]

BILLING CODE 6560–50–P

[1] The EPA's call for information for this review was issued on August 29, 2013 (78 FR 53452).

[2] The EPA held a workshop titled ''Workshop to Discuss Policy-Relevant Science to Inform EPA's Review of the Secondary NO_X and SO_X NAAQS'' on March 4–6, 2014.

ENVIRONMENTAL PROTECTION AGENCY

[EPA–HQ–OW–2015–0714; FRL 9936–79–OW]

Notice of a Public Meeting of the National Drinking Water Advisory Council

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of a public meeting and location.

SUMMARY: On November 2, 2015, the U.S. Environmental Protection Agency (EPA) announced a meeting of the National Drinking Water Advisory Council (NDWAC) in the **Federal Register**, as authorized under the Safe Drinking Water Act. This notice announces the location of the meeting (see the **ADDRESSES** section of this notice). The meeting is scheduled for November 17, 18 and 19, 2015. During this meeting, the NDWAC will focus discussions on developing recommendations for the EPA Administrator on the Lead and Copper National Primary Drinking Water Regulation—Long Term Revisions.

DATES: The meeting on November 17, 2015, will be held from 8:30 a.m. to 4:15 p.m.; November 18, 2015, from 8 a.m. to 5 p.m.; and November 19, 2015, from 8 a.m. to noon, eastern standard time.

ADDRESSES: The public meeting will be held at the Crystal City Marriott at Reagan National Airport, 1999 Jefferson Davis Highway, Arlington, Virginia 22202.

FOR FURTHER INFORMATION CONTACT: For more information about this meeting or to request written materials, contact Michelle Schutz of the Office of Ground Water and Drinking Water, U.S. Environmental Protection Agency, by phone at 202–564–7374 or by email at *schutz.michelle@epa.gov.* For additional information about the NDWAC meeting, please visit *http://water.epa.gov/drink/ndwac/* or *www.regulations.gov* (search for Docket ID No. EPA–HQ–OW–2015–0714).

SUPPLEMENTARY INFORMATION: On November 2, 2015, the EPA announced a meeting of the National Drinking Water Advisory Council (NDWAC) in the **Federal Register** at 80 FR 67397.

Details about Participating in the Meeting: Teleconferencing will be available during the meeting. The number of teleconference connections available for the meeting is limited and will be offered on a first-come, first-served basis. The teleconference number is (1) 866–299–3188; when prompted, enter conference code 202 564 7347.

Dated: November 3, 2015.

Rebecca M. Clark,

Acting Director, Office of Ground Water and Drinking Water.

[FR Doc. 2015–28494 Filed 11–6–15; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[FRL_9926–07–OEI]

Cross-Media Electronic Reporting: Authorized Program Revision Approval, State of Alabama

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice.

SUMMARY: This notice announces EPA's approval of the State of Alabama's request to revise/modify certain of its EPA-authorized programs to allow electronic reporting.

DATES: EPA's approval is effective [Insert date of publication in the **Federal Register**].

FOR FURTHER INFORMATION CONTACT: Karen Seeh, U.S. Environmental Protection Agency, Office of Environmental Information, Mail Stop 2823T, 1200 Pennsylvania Avenue NW., Washington, DC 20460, (202) 566–1175, *seeh.karen@epa.gov.*

SUPPLEMENTARY INFORMATION: On October 13, 2005, the final Cross-Media Electronic Reporting Rule (CROMERR) was published in the **Federal Register** (70 FR 59848) and codified as part 3 of title 40 of the CFR. CROMERR establishes electronic reporting as an acceptable regulatory alternative to paper reporting and establishes requirements to assure that electronic documents are as legally dependable as their paper counterparts. Subpart D of CROMERR requires that state, tribal or local government agencies that receive, or wish to begin receiving, electronic reports under their EPA-authorized programs must apply to EPA for a revision or modification of those programs and obtain EPA approval. Subpart D provides standards for such approvals based on consideration of the electronic document receiving systems that the state, tribe, or local government will use to implement the electronic reporting. Additionally, § 3.1000(b) through (e) of 40 CFR part 3, subpart D provides special procedures for program revisions and modifications to allow electronic reporting, to be used at the option of the state, tribe or local government in place of procedures available under existing program-specific authorization regulations. An application submitted under the subpart D procedures must show that the state, tribe or local government has sufficient legal authority to implement the electronic reporting components of the programs covered by the application and will use electronic document receiving systems that meet the applicable subpart D requirements.

On January 20, 2010, the Alabama Department of Environmental Management (ADEM) submitted an application titled ''Electronic Environmental Data Exchange Reporting System'' for revisions/modifications to its EPA-approved programs under title 40 CFR to allow new electronic reporting. EPA reviewed ADEM's request to revise/modify its EPA-authorized programs and, based on this review, EPA determined that the application met the standards for approval of authorized program revisions/modifications set out in 40 CFR part 3, subpart D. In accordance with 40 CFR 3.1000(d), this notice of EPA's decision to approve Alabama's request to revise/modify its following EPA-authorized programs to allow electronic reporting under 40 CFR parts 122 and 264, is being published in the **Federal Register**:

Part 123—EPA Administered Permit Programs: The National Pollutant Discharge Elimination System; and

Part 272—Approved State Hazardous Waste Management Programs.

ADEM was notified of EPA's determination to approve its application with respect to the authorized programs listed above.

Matthew Leopard,

Director, Office of Information Collection.

[FR Doc. 2015–28365 Filed 11–6–15; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[FRL_9931–89–OEI]

Cross-Media Electronic Reporting: Authorized Program Revision Approval, State of Maine

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice.

SUMMARY: This notice announces EPA's approval of the State of Maine's request to revise/modify certain of its EPA-authorized programs to allow electronic reporting.

DATES: EPA's approval is effective November 9, 2015.

FOR FURTHER INFORMATION CONTACT: Karen Seeh, U.S. Environmental Protection Agency, Office of Environmental Information, Mail Stop 2823T, 1200 Pennsylvania Avenue NW., Washington, DC 20460, (202) 566–1175, *seeh.karen@epa.gov.*

SUPPLEMENTARY INFORMATION: On October 13, 2005, the final Cross-Media Electronic Reporting Rule (CROMERR) was published in the **Federal Register** (70 FR 59848) and codified as part 3 of title 40 of the CFR. CROMERR establishes electronic reporting as an acceptable regulatory alternative to paper reporting and establishes requirements to assure that electronic documents are as legally dependable as their paper counterparts. Subpart D of CROMERR requires that state, tribal or local government agencies that receive, or wish to begin receiving, electronic reports under their EPA-authorized programs must apply to EPA for a revision or modification of those programs and obtain EPA approval. Subpart D provides standards for such approvals based on consideration of the electronic document receiving systems that the state, tribe, or local government will use to implement the electronic reporting. Additionally, § 3.1000(b) through (e) of 40 CFR part 3, subpart D provides special procedures for program revisions and modifications to allow electronic reporting, to be used at the option of the state, tribe or local government in place of procedures available under existing program-specific authorization regulations. An application submitted under the subpart D procedures must show that the state, tribe or local government has sufficient legal authority to implement the electronic reporting components of the programs covered by the application and will use electronic document receiving systems that meet the applicable subpart D requirements.

On September 11, 2015, the Maine Department of Environmental Protection (ME DEP) submitted an application titled ''National Network Discharge Monitoring Report System'' for revisions/modifications to its EPA-approved stormwater and pretreatment programs under title 40 CFR to allow new electronic reporting. EPA reviewed ME DEP's request to revise/modify its EPA-authorized programs and, based on this review, EPA determined that the application met the standards for approval of authorized program revisions/modifications set out in 40 CFR part 3, subpart D. In accordance with 40 CFR 3.1000(d), this notice of EPA's decision to approve Maine's request to revise/modify its following EPA-authorized programs to allow electronic reporting under 40 CFR parts

122 and 403, is being published in the **Federal Register**:

Part 123—EPA Administered Permit Programs: The National Pollutant Discharge Elimination System; and

Part 403—General Pretreatment Regulations For Existing And New Sources Of Pollution.

ME DEP was notified of EPA's determination to approve its application with respect to the authorized programs listed above.

Matthew Leopard,

Director, Office of Information Collection.

[FR Doc. 2015–28366 Filed 11–6–15; 8:45 am]

BILLING CODE 6560–50–P

FEDERAL COMMUNICATIONS COMMISSION

[3060-xxxx]

Information Collection Being Submitted for Review and Approval to the Office of Management and Budget

AGENCY: Federal Communications Commission.

ACTION: Notice and request for comments.

SUMMARY: As part of its continuing effort to reduce paperwork burdens, and as required by the Paperwork Reduction Act (PRA) of 1995 (44 U.S.C. 3501–3520), the Federal Communications Commission (FCC or Commission) invites the general public and other Federal agencies to take this opportunity to comment on the following information collections. Comments are requested concerning: whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility; the accuracy of the Commission's burden estimate; ways to enhance the quality, utility, and clarity of the information collected; ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology; and ways to further reduce the information collection burden on small business concerns with fewer than 25 employees. The FCC may not conduct or sponsor a collection of information unless it displays a currently valid OMB control number. No person shall be subject to any penalty for failing to comply with a collection of information subject to the PRA that does not display a valid OMB control number.

DATES: Written comments should be submitted on or before December 9, 2015. If you anticipate that you will be submitting comments, but find it difficult to do so within the period of time allowed by this notice, you should advise the contacts below as soon as possible.

ADDRESSES: Direct all PRA comments to Nicholas A. Fraser, OMB, via email *Nicholas_A._Fraser@omb.eop.gov*; and to Nicole Ongele, FCC, via email *PRA@fcc.gov* and to *Nicole.Ongele@fcc.gov.* Include in the comments the OMB control number as shown in the ''Supplementary Information'' section below.

FOR FURTHER INFORMATION CONTACT: For additional information or copies of the information collection, contact Nicole Ongele at (202) 418–2991.

To view a copy of this information collection request (ICR) submitted to OMB: (1) Go to the Web page <*http://www.reginfo.gov/public/do/PRAMain*>, (2) look for the section of the Web page called ''Currently Under Review,'' (3) click on the downward-pointing arrow in the ''Select Agency'' box below the ''Currently Under Review'' heading, (4) select ''Federal Communications Commission'' from the list of agencies presented in the ''Select Agency'' box, (5) click the ''Submit'' button to the right of the ''Select Agency'' box, (6) when the list of FCC ICRs currently under review appears, look for the OMB control number of this ICR and then click on the ICR Reference Number. A copy of the FCC submission to OMB will be displayed.

SUPPLEMENTARY INFORMATION:

OMB Control Number: 3060-xxxx.

Title: Direct Access to Numbers Order FCC 15–70 Conditions.

Form Number: N/A.

Type of Review: New Collection.

Respondents: Business or other for-profit.

Number of Respondents and Responses: 13 respondents; 13 responses.

Estimated Time per Response: 120 hours.

Frequency of Response: One-time application, on-going and bi-annual reporting requirements.

Obligation To Respond: Voluntary. Statutory Authority for this information collection is contained in 47 U.S.C. 251(e)(1).

Total Annual Burden: 1,560 hours.

Total Annual Costs: No Cost.

Privacy Act Impact Assessment: No impact(s).

Nature and Extent of Confidentiality: If respondents submit information which respondents believe is confidential, respondents may request confidential treatment of such information pursuant to section 0.459 of the Commission's rules, 47 CFR 0.459.

Needs and Uses: On June 18, 2015, the Commission adopted a Report and Order establishing the Numbering Authorization Application process, which allows interconnected VoIP providers to apply for a blanket authorization from the FCC that, once granted, will allow them to demonstrate that they have the authority to provide service in specific areas, thus enabling them to request numbers directly from the Numbering Administrators. This collection covers the information and certifications that applicants must submit in order to comply with the Numbering Authorization Application process. The data, information, and documents acquired through this collection will allow interconnected VoIP providers to obtain numbers with minimal burden or delay while also preventing providers from obtaining numbers without first demonstrating that they can deploy and properly utilize such resources. This information will also help the Federal Communications Commission (FCC) protect against number exhaust while promoting competitive neutrality among traditional telecommunications carriers and interconnected VoIP providers by allowing both entities to obtain numbers directly from the Numbering Administrators. It will further help the FCC to maintain efficient utilization of numbering resources and ensure that telephone numbers are not being stranded.

Federal Communications Commission.

Gloria J. Miles,

Federal Register Liaison Officer, Office of the Secretary.

[FR Doc. 2015–28389 Filed 11–6–15; 8:45 am]

BILLING CODE 6712–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Centers for Disease Control and Prevention

[60Day–16–16CA; Docket No. CDC–2015–0096]

Proposed Data Collection Submitted for Public Comment and Recommendations

AGENCY: Centers for Disease Control and Prevention (CDC), Department of Health and Human Services (HHS).

ACTION: Notice with comment period.

SUMMARY: The Centers for Disease Control and Prevention (CDC), as part of its continuing efforts to reduce public burden and maximize the utility of government information, invites the general public and other Federal agencies to take this opportunity to comment on proposed and/or continuing information collections, as required by the Paperwork Reduction Act of 1995. This notice invites comment on a proposed information collection entitled ''Update the Height Recommendation for Proper Seat Belt Fit among Children.'' CDC will use the information collected to inform CDC's child passenger safety recommendation regarding when children can safely transition from using a booster seat to using only a seat belt.

DATES: Written comments must be received on or before January 8, 2016.

ADDRESSES: You may submit comments, identified by Docket No. CDC–2015–0096 by any of the following methods:

Federal eRulemaking Portal: Regulation.gov. Follow the instructions for submitting comments.

Mail: Leroy A. Richardson, Information Collection Review Office, Centers for Disease Control and Prevention, 1600 Clifton Road NE., MS–D74, Atlanta, Georgia 30329.

Instructions: All submissions received must include the agency name and Docket Number. All relevant comments received will be posted without change to Regulations.gov, including any personal information provided. For access to the docket to read background documents or comments received, go to Regulations.gov.

*Please note: All public comment should be submitted through the Federal eRulemaking portal (*Regulations.gov*) or by U.S. mail to the address listed above.*

FOR FURTHER INFORMATION CONTACT: To request more information on the proposed project or to obtain a copy of the information collection plan and instruments, contact the Information Collection Review Office, Centers for Disease Control and Prevention, 1600 Clifton Road NE., MS–D74, Atlanta, Georgia 30329; phone: 404–639–7570; Email: *omb@cdc.gov.*

SUPPLEMENTARY INFORMATION:

Under the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3501–3520), Federal agencies must obtain approval from the Office of Management and Budget (OMB) for each collection of information they conduct or sponsor. In addition, the PRA also requires Federal agencies to provide a 60-day notice in the **Federal Register** concerning each proposed collection of information, including each new proposed collection, each proposed extension of existing collection of information, and each reinstatement of previously approved information collection before submitting the collection to OMB for approval. To comply with this requirement, we are publishing this notice of a proposed data collection as described below.

Comments are invited on: (a) Whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information shall have practical utility; (b) the accuracy of the agency's estimate of the burden of the proposed collection of information; (c) ways to enhance the quality, utility, and clarity of the information to be collected; (d) ways to minimize the burden of the collection of information on respondents, including through the use of automated collection techniques or other forms of information technology; and (e) estimates of capital or start-up costs and costs of operation, maintenance, and purchase of services to provide information. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; to develop, acquire, install and utilize technology and systems for the purpose of collecting, validating and verifying information, processing and maintaining information, and disclosing and providing information; to train personnel and to be able to respond to a collection of information, to search data sources, to complete and review the collection of information; and to transmit or otherwise disclose the information.

Proposed Project

Update the Height Recommendation for Proper Seat Belt Fit among Children—New—National Center for Injury Prevention and Control (NCIPC), Centers for Disease Control and Prevention (CDC).

Background and Brief Description

Motor vehicle crashes are a leading cause of death among children. Proper restraint use is critical for children in order to prevent injuries and death in a motor vehicle crash. Booster seat use reduces the risk for serious injury by 45% for children aged 4–8 years when compared with seat belt use alone. For older children and adults, seat belt use reduces the risk for death and serious injury by approximately half (NHTSA, 2013). Based on this evidence, CDC recommends using age- and size-appropriate child restraints (including child safety seats and booster seats) in the back seat until adult seat belts fit properly (*i.e.* when the lap belt lies across the upper thighs, not the stomach; and the shoulder belt lies across the shoulder and chest, not the neck or face).

For maximum protection, it is especially important for children to not transition to using only a seat belt before they are large enough for the seat belt to properly fit. The current recommendation for when children can safely transition to a seat belt is 57 inches tall. This height recommendation of 57 inches was derived from a study of 155 children aged 6 to 12 years who were assessed for seat belt fit in 3 different types of vehicles in 1993. Since 1993, both children and the vehicle fleet have changed.

The goal of this new collection is to determine whether the previous height recommendation for proper seat belt fit among children is valid in the current vehicle fleet and among today's children. Findings from this data collection will inform CDC's child passenger safety recommendation regarding when children can safely transition from using a booster seat with the vehicle seat belt to using only the vehicle seat belt. This study will also provide information on ways to further reduce motor vehicle-related injuries and deaths among children. Prospective study participants will answer a series of screening questions. Individuals who meet the screening criteria and are willing to participate will complete an in-person measurement session lasting approximately 2 hours. In-person measurement sessions will collect data on 224 children aged 6–12 years. Data will be analyzed using descriptive statistics, mean, standard deviation, and logistic regression.

OMB approval is requested for three years. Participation in the information collection is voluntary. There are no costs to respondents other than their time.

ESTIMATED ANNUALIZED BURDEN HOURS

Type of respondents	Form name	Number of respondents	Number of responses per respondent	Response burden (hours)	Total burden hours
Parent/guardian of children aged 6–12 years.	Screener Script Guide	200	1	5/60	17
Child participants aged 6–12 years	Seat Belt Fit Measurements	75	1	2	150
Total					167

Leroy A. Richardson,

Chief, Information Collection Review Office, Office of Scientific Integrity, Office of the Associate Director for Science, Office of the Director, Centers for Disease Control and Prevention.

[FR Doc. 2015–28409 Filed 11–6–15; 8:45 am]

BILLING CODE 4163–18–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Centers for Disease Control and Prevention

[60Day–16–16BZ; Docket No. CDC–2015–0095]

Proposed Data Collection Submitted for Public Comment and Recommendations

AGENCY: Centers for Disease Control and Prevention (CDC), Department of Health and Human Services (HHS).

ACTION: Notice with comment period.

SUMMARY: The Centers for Disease Control and Prevention (CDC), as part of its continuing efforts to reduce public burden and maximize the utility of government information, invites the general public and other Federal agencies to take this opportunity to comment on proposed and/or continuing information collections, as required by the Paperwork Reduction Act of 1995. This notice invites comment on a proposed information collection entitled ''Monitoring and Reporting for the Core State Violence and Injury Prevention Program Cooperative Agreement.'' CDC will use the information collected to monitor cooperative agreement awardees and to identify challenges to program implementation and achievement of outcomes.

DATES: Written comments must be received on or before January 8, 2016.

ADDRESSES: You may submit comments, identified by Docket No. CDC–2015–0095 by any of the following methods: Federal eRulemaking Portal: Regulation.gov. Follow the instructions for submitting comments.

Mail: Leroy A. Richardson, Information Collection Review Office, Centers for Disease Control and Prevention, 1600 Clifton Road NE., MS–D74, Atlanta, Georgia 30329.

Instructions: All submissions received must include the agency name and Docket Number. All relevant comments received will be posted without change to Regulations.gov, including any personal information provided. For access to the docket to read background documents or comments received, go to Regulations.gov.

Please note: All public comment should be submitted through the Federal eRulemaking portal (Regulations.gov) or by U.S. mail to the address listed above.

FOR FURTHER INFORMATION CONTACT: To request more information on the proposed project or to obtain a copy of the information collection plan and instruments, contact the Information Collection Review Office, Centers for Disease Control and Prevention, 1600 Clifton Road NE., MS–D74, Atlanta, Georgia 30329; phone: 404–639–7570; Email: *omb@cdc.gov.*

SUPPLEMENTARY INFORMATION: Under the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3501–3520), Federal agencies must obtain approval from the Office of Management and Budget (OMB) for each collection of information they conduct or sponsor. In addition, the PRA also requires Federal agencies to provide a 60-day notice in the **Federal Register** concerning each proposed collection of information, including each new proposed collection, each proposed extension of existing collection of information, and each reinstatement of previously approved information collection before submitting the collection to OMB for approval. To comply with this requirement, we are publishing this notice of a proposed data collection as described below.

Comments are invited on: (a) Whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information shall have practical utility; (b) the accuracy of the agency's estimate of the burden of the proposed collection of information; (c) ways to enhance the quality, utility, and clarity of the information to be collected; (d) ways to minimize the burden of the collection of information on respondents, including through the use of automated collection techniques or other forms of information technology; and (e) estimates of capital or start-up costs and costs of operation, maintenance, and purchase of services to provide information. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; to develop, acquire, install and utilize technology and systems for the purpose of collecting, validating and verifying information, processing and maintaining information, and disclosing and providing information; to train personnel and to be able to respond to a collection of information, to search data sources, to complete and review the collection of information; and to transmit or otherwise disclose the information.

Proposed Project

Monitoring and Reporting for the Core State Violence and Injury Prevention Program Cooperative Agreement—New —National Center for Injury Prevention and Control (NCIPC), Centers for Disease Control and Prevention (CDC).

Background and Brief Description

Unintentional and violence-related injuries and their consequences are the leading causes of death for the first four decades of life, regardless of gender, race, or socioeconomic status. More than 192,000 individuals in the United States die each year as a result of unintentional injuries and violence, and more than 31 million others suffer non-fatal injuries requiring emergency department visits each year. Given these factors, the Public Health Service Act (PHS Act) provides an important opportunity for states to advance public health across the lifespan and to reduce health disparities. Support and guidance for these programs have been provided through cooperative agreement funding and technical assistance administered by CDC's National Center for Injury Prevention and Control (NCIPC). The goal of this ICR is to collect information needed to monitor cooperative agreement programs funded under the Core State Violence and Injury Prevention Program (Core SVIPP) (CDC–RFA–CE16–1602).

Information to be collected will provide crucial data for program performance monitoring and provide CDC with the capacity to respond in a timely manner to requests for information about the program from the Department of Health and Human Services (HHS), the White House, Congress, and other sources. Awardees will report progress and activity information to CDC on an annual schedule using an Excel-based fillable electronic templates. Each awardee will submit three information collection tools: Annual Progress Report, Evaluation and Performance Management Plan, and Injury Indicator Spreadsheets. In Year 1, each awardee will have additional burden related to initial collection of the reporting tools. Initial population of the tools is a one-time activity, after completing the initial population of the tools, pertinent information only needs to be updated annually for each report.

CDC will use the information collected to monitor each awardee's progress and to identify facilitators and challenges to program implementation and achievement of outcomes. Monitoring allows CDC to determine whether an awardee is meeting performance and goals and to make adjustments in the type and level of technical assistance provided to them, as needed, to support attainment of their performance measures. With the tools, the use of a standard set of data elements, definitions and specifications at all levels will help to improve the quality and comparability of performance information that is received by CDC for multiple awardees and multiple award types by ensuring that the same information is collected on all strategies and performance measures with slightly different areas of emphasis, depending on the awardee type (BASE, Enhanced with 1 Component, or Enhanced 2 Components).

OMB approval is requested for three years. Participation in the information collection is required as a condition of funding. There are no costs to respondents other than their time.

ESTIMATED ANNUALIZED BURDEN HOURS

Type of respondents	Form name	Number of respondents	Number of responses per respondent	Average burden per response (in hours)	Total burden (in hours)
Core SVIPP BASE Awardees	Initial Population-Annual Progress Report.	20	1	22	440
	Annual Progress Report	20	1	11	220
	Evaluation and Performance Management Plan.	20	1	2	40
	Injury Indicator Spreadsheet	20	1	14	280
Core SVIPP 1—Enhanced Component Awardees.	Initial Population-Annual Progress Report.	5	1	73	365
	Annual Progress Report	5	1	58	290
	Evaluation and Performance Management Plan.	5	1	3	15
	Injury Indicator Spreadsheet	5	1	14	70
Core SVIPP 2—Enhanced Component Awardees.	Initial Population-Annual Progress Report.	5	1	146	730
	Annual Progress Report	5	1	116	580
	Evaluation and Performance Management Plan.	5	1	4	20
	Injury Indicator Spreadsheet	5	1	14	70
Total					3,120

Leroy A. Richardson,

Chief, Information Collection Review Office, Office of Scientific Integrity, Office of the Associate Director for Science, Office of the Director, Centers for Disease Control and Prevention.

[FR Doc. 2015–28408 Filed 11–6–15; 8:45 am]

BILLING CODE 4163–18–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Centers for Disease Control and Prevention

[Docket Number CDC–2015–0075; NIOSH–288]

A Vapor Containment Performance Protocol for Closed System Transfer Devices Used During Pharmacy Compounding and Administration of Hazardous Drugs; Extension of Comment Period

AGENCY: National Institute for Occupational Safety and Health (NIOSH) of the Centers for Disease Control and Prevention (CDC), Department of Health and Human Services (HHS).

ACTION: Notice and extension of comment period.

SUMMARY: On September 8, 2015, the Director of the National Institute for Occupational Safety and Health (NIOSH) of the Centers for Disease Control and Prevention (CDC), published a notice in the **Federal Register** [80 FR 53802] announcing the availability of the following draft document for public comment entitled *A Vapor Containment Performance Protocol for Closed System Transfer Devices Used During Pharmacy Compounding and Administration of Hazardous Drugs.* Written comments

were to be received by November 9, 2015. NIOSH is extending the public comment period for an additional 120 days.

DATES: NIOSH is extending the comment period on the document published September 8, 2015 (80 FR 53802). Electronic or written comments must be received by March 8, 2016.

ADDRESSES: You may submit comments, identified by CDC–2015–0075 and docket number NIOSH–288, by any of the following methods:

- *Federal eRulemaking Portal: www.regulations.gov*—Follow the instructions for submitting comments.
- *Mail*: National Institute for Occupational Safety and Health, NIOSH Docket Office, 1090 Tusculum Avenue, MS C–34, Cincinnati, Ohio 45226–1998.

FOR FURTHER INFORMATION CONTACT: Deborah V. Hirst, NIOSH, Division of Applied Research and Technology, Alice Hamilton Laboratories, 1090 Tusculum Avenue, MS R–5, Cincinnati, Ohio 45226, telephone (513) 841–4141 (not a toll free number), Email: *hazardousdrugs@cdc.gov.*

Dated: November 2, 2015.

John Howard,

Director, National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention.

[FR Doc. 2015–28456 Filed 11–6–15; 8:45 am]

BILLING CODE 4163–19–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Centers for Medicare & Medicaid Services

[Document Identifiers: CMS–10434 and CMS–R–131]

Agency Information Collection Activities: Proposed Collection; Comment Request

AGENCY: Centers for Medicare & Medicaid Services.

ACTION: Notice.

SUMMARY: The Centers for Medicare & Medicaid Services (CMS) is announcing an opportunity for the public to comment on CMS' intention to collect information from the public. Under the Paperwork Reduction Act of 1995 (the PRA), federal agencies are required to publish notice in the **Federal Register** concerning each proposed collection of information (including each proposed extension or reinstatement of an existing collection of information) and to allow 60 days for public comment on the proposed action. Interested persons are invited to send comments regarding our burden estimates or any other aspect of this collection of information, including any of the following subjects: (1) The necessity and utility of the proposed information collection for the proper performance of the agency's functions; (2) the accuracy of the estimated burden; (3) ways to enhance the quality, utility, and clarity of the information to be collected; and (4) the use of automated collection techniques or other forms of information technology to minimize the information collection burden.

DATES: Comments must be received by January 8, 2016.

ADDRESSES: When commenting, please reference the document identifier or OMB control number. To be assured consideration, comments and recommendations must be submitted in any one of the following ways:

1. *Electronically.* You may send your comments electronically to *http://www.regulations.gov.* Follow the instructions for ''Comment or Submission'' or ''More Search Options'' to find the information collection document(s) that are accepting comments.

2. *By regular mail.* You may mail written comments to the following address: CMS, Office of Strategic Operations and Regulatory Affairs, Division of Regulations Development, Attention: Document Identifier/OMB Control Number, Room C4–26–05, 7500 Security Boulevard, Baltimore, Maryland 21244–1850.

To obtain copies of a supporting statement and any related forms for the proposed collection(s) summarized in this notice, you may make your request using one of following:

1. Access CMS' Web site address at *http://www.cms.hhs.gov/PaperworkReductionActof1995.*

2. Email your request, including your address, phone number, OMB number, and CMS document identifier, to *Paperwork@cms.hhs.gov.*

3. Call the Reports Clearance Office at (410) 786–1326.

FOR FURTHER INFORMATION CONTACT: Reports Clearance Office at (410) 786–1326.

SUPPLEMENTARY INFORMATION:

Contents

This notice sets out a summary of the use and burden associated with the following information collections. More detailed information can be found in each collection's supporting statement and associated materials (*see* **ADDRESSES**).

Under the PRA (44 U.S.C. 3501–3520), federal agencies must obtain approval from the Office of Management and Budget (OMB) for each collection of information they conduct or sponsor. The term ''collection of information'' is defined in 44 U.S.C. 3502(3) and 5 CFR 1320.3(c) and includes agency requests or requirements that members of the public submit reports, keep records, or provide information to a third party. Section 3506(c)(2)(A) of the PRA requires federal agencies to publish a 60-day notice in the **Federal Register** concerning each proposed collection of information, including each proposed extension or reinstatement of an existing collection of information, before submitting the collection to OMB for approval. To comply with this requirement, CMS is publishing this notice.

Information Collection

1. *Type of Information Collection Request*: Revision of a currently approved collection; *Title of Information Collection*: Medicaid and CHIP Program (MACPro); *Use*: While currently approved by OMB under the regular PRA process, CMS is proposing to have all current and upcoming MACPro collections approved under OMB's generic process. We are also transitioning MACPro to a fully functioning electronic system such that MACPro becomes the sole system of record. MACPro will be the required means for states to amend Medicaid and CHIP state plans, waivers, and demonstrations. Templates that will be submitted for approval under MACPro include certain collections approved under our generic umbrella (CMS–10398, OMB 0938–1148), relevant collections approved as a regular stand-alone information collection requests, and upcoming collections. *Form Number*: CMS–10434 (OMB Control Number: 0938–1188); *Frequency*: Monthly, yearly, quarterly, semi-annually, once, or occasionally; *Affected Public*: State, Local, or Tribal Governments; *Number of Respondents*: 56; *Total Annual Responses*: 3,360; Total *Annual Hours*: 89,012. (For policy questions regarding this collection contact Annette Pearson at 410–786–6858).

2. *Type of Information Collection Request*: Extension of a currently approved collection; *Title of Information Collection*: Advance Beneficiary Notice of Noncoverage (ABN); *Use*: The Advance Beneficiary Notice (ABN) is delivered by Part B paid

physicians, providers (including institutional providers like outpatient hospitals), practitioners (such as chiropractors), and suppliers, as well as hospice providers and Religious Non-medical Health Care Institutions paid under Part A. Home health agencies providing items and services under Part A or Part B also use the ABN. Other Medicare institutional providers paid under Part A use other approved notices for this purpose. With this PRA submission, minimal formatting changes have been made to the ABN form, including the addition of language informing beneficiaries of their rights under Section 504 of the Rehabilitation Act of 1973 (section 504) by alerting the beneficiary to CMS's nondiscrimination practices and the availability of alternate forms of this notice, if needed. Additionally, minor language and grammatical changes have been made to the form's instructions to improve provider/supplier comprehension and decrease the probability of errors in completing the ABN. There are no substantive changes to the form or to the instructions. *Form Number*: CMS–R–131 (OMB control number: 0938–0566; *Frequency*: Occasionally; *Affected Public*: Private sector (Business or other for-profits and Not-for-profit institutions); *Number of Respondents*: 1,499,910; *Total Annual Responses*: 62,910,000; *Total Annual Hours*: 7,339,710. (For policy questions regarding this collection contact Evelyn Blaemire at 410–786–1803).

Dated: November 4, 2015.

William N. Parham, III,

Director, Paperwork Reduction Staff, Office of Strategic Operations and Regulatory Affairs.

[FR Doc. 2015–28449 Filed 11–6–15; 8:45 am]

BILLING CODE 4120–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Centers for Medicare & Medicaid Services

[Document Identifier: CMS–906 and CMS–1771]

Agency Information Collection Activities: Submission for OMB Review; Comment Request

ACTION: Notice.

SUMMARY: The Centers for Medicare & Medicaid Services (CMS) is announcing an opportunity for the public to comment on CMS' intention to collect information from the public. Under the Paperwork Reduction Act of 1995 (PRA), federal agencies are required to publish notice in the **Federal Register** concerning each proposed collection of information, including each proposed extension or reinstatement of an existing collection of information, and to allow a second opportunity for public comment on the notice. Interested persons are invited to send comments regarding the burden estimate or any other aspect of this collection of information, including any of the following subjects: (1) The necessity and utility of the proposed information collection for the proper performance of the agency's functions; (2) the accuracy of the estimated burden; (3) ways to enhance the quality, utility, and clarity of the information to be collected; and (4) the use of automated collection techniques or other forms of information technology to minimize the information collection burden.

DATES: Comments on the collection(s) of information must be received by the OMB desk officer by December 9, 2015.

ADDRESSES: When commenting on the proposed information collections, please reference the document identifier or OMB control number. To be assured consideration, comments and recommendations must be received by the OMB desk officer via one of the following transmissions: OMB, Office of Information and Regulatory Affairs, Attention: CMS Desk Officer, Fax Number: (202) 395–5806 *OR*, Email: *OIRA_submission@omb.eop.gov*.

To obtain copies of a supporting statement and any related forms for the proposed collection(s) summarized in this notice, you may make your request using one of following:

1. Access CMS' Web site address at *http://www.cms.hhs.gov/PaperworkReductionActof1995.*
2. Email your request, including your address, phone number, OMB number, and CMS document identifier, to *Paperwork@cms.hhs.gov.*
3. Call the Reports Clearance Office at (410) 786–1326.

FOR FURTHER INFORMATION CONTACT: Reports Clearance Office at (410) 786–1326.

SUPPLEMENTARY INFORMATION: Under the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3501–3520), federal agencies must obtain approval from the Office of Management and Budget (OMB) for each collection of information they conduct or sponsor. The term ''collection of information'' is defined in 44 U.S.C. 3502(3) and 5 CFR 1320.3(c) and includes agency requests or requirements that members of the public submit reports, keep records, or provide information to a third party. Section 3506(c)(2)(A) of the PRA (44 U.S.C. 3506(c)(2)(A)) requires federal agencies to publish a 30-day notice in the **Federal Register** concerning each proposed collection of information, including each proposed extension or reinstatement of an existing collection of information, before submitting the collection to OMB for approval. To comply with this requirement, CMS is publishing this notice that summarizes the following proposed collection(s) of information for public comment:

1. *Type of Information Collection Request:* Extension of a currently approved collection; *Title of Information Collection:* The Fiscal Soundness Reporting Requirements; *Use:* The CMS is assigned responsibility for overseeing all Medicare Advantage Organizations (MAOs), Prescription Drug Plan (PDP) sponsors and PACE organizations on-going financial performance. Specifically, CMS needs the requested collection of information to establish that contracting entities within those programs maintain fiscally sound organizations and thereby remain a going concern. All contracting organizations must submit annual independently audited financial statements one time per year. The MAOs with a negative net worth and/or a net loss and the amount of that loss is greater than one-half of the organization's total net worth must file three quarterly financial statements. Currently, there are approximately 71 MAOs filing quarterly financial statements. Part D organizations must also file 3 quarterly financial statements. The PACE organizations are required to file 4 quarterly financial statements for the first three years in the program as well as PACE organizations with a negative net worth and/or a net loss and the amount of that loss is greater than one-half of the organization's total net worth. *Form Number:* CMS–906 (OMB control number: 0938–0469); *Frequency:* Annually; *Affected Public:* Business or other for-profits; *Number of Respondents:* 815; *Total Annual Responses:* 1,518; *Total Annual Hours:* 506. (For policy questions regarding this collection contact Geralyn Glenn at 410–786–0973.)

2. *Type of Information Collection Request:* Reinstatement without change of a previously approved collection; *Title of Information Collection:* Emergency and Foreign Hospital Services; *Use:* Section 1866 of the Social Security Act states that any provider of services shall be qualified to participate in the Medicare program and shall be eligible for payments under Medicare if it files an agreement with the Secretary to meet the conditions outlined in this section of the Act. Section 1814 (d)(1) of

the Social Security Act and 42 CFR 424.100, allows payment of Medicare benefits for a Medicare beneficiary to a nonparticipating hospital that does not have an agreement in effect with the Centers for Medicare and Medicaid Services. These payments can be made if such services were emergency services and if CMS would be required to make the payment if the hospital had an agreement in effect and met the conditions of payment. This form is used in connection with claims for emergency hospital services provided by hospitals that do not have an agreement in effect under section 1866 of the Social Security Act. As specified in 42 CFR 424.103(b), before a non-participating hospital may be paid for emergency services rendered to a Medicare beneficiary, a statement must be submitted that is sufficiently comprehensive to support that an emergency existed. Form CMS–1771 contains a series of questions relating to the medical necessity of the emergency. The attending physician must attest that the hospitalization was required under the regulatory emergency definition and give clinical documentation to support the claim. A photocopy of the beneficiary's hospital records may be used in lieu of the CMS–1771 if the records contain all the information required by the form. *Form Number:* CMS–1771 (OMB control number: 0938–0023); *Frequency:* Annually; *Affected Public:* Private sector (Business or other for-profits and Not-for-profit institutions); *Number of Respondents:* 100; *Total Annual Responses:* 200; *Total Annual Hours:* 50. (For policy questions regarding this collection contact Shauntari Cheely at 410–786–1818.)

Dated: November 4, 2015.

William N. Parham, III

Director, Paperwork Reduction Staff, Office of Strategic Operations and Regulatory Affairs.

[FR Doc. 2015–28448 Filed 11–6–15; 8:45 am]

BILLING CODE 4120–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Food and Drug Administration

[Docket No. FDA–2015–N–0001]

Food Advisory Committee; Notice of Meeting

AGENCY: Food and Drug Administration, HHS.

ACTION: Notice.

This notice announces a forthcoming meeting of a public advisory committee of the Food and Drug Administration (FDA). The meeting will be open to the public.

Name of Committee: Food Advisory Committee.

General Function of the Committee: To provide advice and recommendations to the Agency on FDA's regulatory issues.

Date and Time: The meeting will be held on December 7 and 8, 2015, from 8 a.m. to 5 p.m.

Location: FDA White Oak Campus, 10903 New Hampshire Ave., Bldg. 31 Conference Center, the Great Room (rm. 1503A), Silver Spring, MD 20993–0002. Answers to commonly asked questions including information regarding special accommodations due to a disability, visitor parking, and transportation may be accessed at: *http://www.fda.gov/AdvisoryCommittees/AboutAdvisoryCommittees/ucm408555.htm.*

Contact Person: Karen Strambler, Center for Food Safety and Applied Nutrition, HFS–024, Food and Drug Administration, 5100 Paint Branch Parkway, College Park, MD 20740, 240–402–2589, or FDA Advisory Committee Information Line, 1–800–741–8138 (301–443–0572 in the Washington, DC area). A notice in the **Federal Register** about last minute modifications that impact a previously announced advisory committee meeting cannot always be published quickly enough to provide timely notice. Therefore, you should always check the Agency's Web site at *http://www.fda.gov/AdvisoryCommittees/default.htm* and scroll down to the appropriate advisory committee meeting link, or call the advisory committee information line to learn about possible modifications before coming to the meeting.

Agenda: The Food Advisory Committee will meet to discuss FDA's policies related to the presence of *Listeria monocytogenes* in foods.

FDA intends to make background material available to the public no later than 2 business days before the meeting. If FDA is unable to post the background material on its Web site prior to the meeting, the background material will be made publicly available at the location of the advisory committee meeting, and the background material will be posted on FDA's Web site after the meeting. Background material is available at *http://www.fda.gov/AdvisoryCommittees/Calendar/default.htm.* Scroll down to the appropriate advisory committee meeting link.

Procedure: Interested persons may present data, information, or views, orally or in writing, on issues pending before the committee. Written submissions may be made to the contact person on or before November 20, 2015. Oral presentations from the public will be scheduled between approximately 11 a.m. to 12 p.m. on December 8, 2015. Those individuals interested in making formal oral presentations should notify the contact person and submit a brief statement of the general nature of the evidence or arguments they wish to present, the names and addresses of proposed participants, and an indication of the approximate time requested to make their presentation on or before November 30, 2015. Time allotted for each presentation may be limited. If the number of registrants requesting to speak is greater than can be reasonably accommodated during the scheduled open public hearing session, FDA may conduct a lottery to determine the speakers for the scheduled open public hearing session. The contact person will notify interested persons regarding their request to speak by November 23, 2015.

Persons attending FDA's advisory committee meetings are advised that the Agency is not responsible for providing access to electrical outlets.

FDA welcomes the attendance of the public at its advisory committee meetings and will make every effort to accommodate persons with disabilities. If you require accommodations due to a disability, please contact Karen Strambler at least 7 days in advance of the meeting.

FDA is committed to the orderly conduct of its advisory committee meetings. Please visit our Web site at *http://www.fda.gov/AdvisoryCommittees/AboutAdvisoryCommittees/ucm111462.htm* for procedures on public conduct during advisory committee meetings.

Notice of this meeting is given under the Federal Advisory Committee Act (5 U.S.C. app. 2).

Dated: November 3, 2015.

Leslie Kux,

Associate Commissioner for Policy.

[FR Doc. 2015–28387 Filed 11–6–15; 8:45 am]

BILLING CODE 4164–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Health Resources and Services Administration

National Vaccine Injury Compensation Program: Revised Amount of the Average Cost of a Health Insurance Policy

The Health Resources and Services Administration (HRSA) is publishing an updated monetary amount of the average cost of a health insurance policy as it relates to the National Vaccine Injury Compensation Program (VICP).

Section 100.2 of the VICP's implementing regulation (42 CFR part 100) states that the revised amount of the average cost of a health insurance policy, as determined by the Secretary of Health and Human Services, is effective upon its delivery to the United States Court of Federal Claims (the Court), and will be published periodically in a notice in the **Federal Register**. This figure is calculated using the most recent Medical Expenditure Panel Survey-Insurance Component (MEPS–IC) data available as the baseline for the average monthly cost of a health insurance policy. This baseline is adjusted by the annual percentage increase/decrease obtained from the most recent annual Kaiser Family Foundation and Health Research and Educational Trust (KFF/HRET) Employer Health Benefits survey or other authoritative source that may be more accurate or appropriate.

In 2015, MEPS–IC, available at *www.meps.ahrq.gov,* published the annual 2014 average total single premium amount per enrolled employee at private-sector establishments that provide health insurance. The figure published was $5,832. This figure is divided by 12-months to determine the cost per month of $486.00. The $486.00 shall be increased or decreased by the percentage change reported by the most recent KFF/HRET, available at *www.kff.org.* The percentage increase from 2014 to 2015 was published at 4 percent. By adding this percentage increase, the calculated average monthly cost of a health insurance policy in 2015 is $505.44.

Therefore, the Secretary of Health and Human Services announces that the revised average cost of a health insurance policy under the VICP is $505.44 per month. In accordance with § 100.2, the revised amount was effective upon its delivery by the Secretary to the Court. Such notice was delivered to the Court on October 23, 2015.

Dated: November 3, 2015.

James Macrae,

Acting Administrator.

[FR Doc. 2015–28436 Filed 11–6–15; 8:45 am]

BILLING CODE 4165–15–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Office of the Secretary

Findings of Research Misconduct

AGENCY: Office of the Secretary, HHS.

ACTION: Notice.

SUMMARY: Notice is hereby given that the Office of Research Integrity (ORI) has taken final action in the following case:

Anil Potti, M.D., Duke University School of Medicine: Based on the reports of investigations conducted by Duke University School of Medicine (Duke) and additional analysis conducted by ORI in its oversight review, ORI found that Dr. Anil Potti, former Associate Professor of Medicine, Duke, engaged in research misconduct in research supported by National Heart, Lung, and Blood Institute (NHLBI), National Institutes of Health (NIH), grant R01 HL072208 and National Cancer Institute (NCI), NIH, grants R01 CA136530, R01 CA131049, K12 CA100639, R01 CA106520, and U54 CA112952.

ORI found that Respondent engaged in research misconduct by including false research data in the following published papers, submitted manuscript, grant application, and the research record as specified in 1–3 below. Specifically, ORI found that:

1. Respondent stated in grant application 1 R01 CA136530–01A1 that 6 out of 33 patients responded positively to dasatinib when only 4 patients were enrolled and none responded and that the 4 CT scans presented in Figure 14 were from the lung cancer study when they were not.

2. Respondent altered data sets to improve the accuracy of predictors for response to treatments in a submitted paper and in the research record by:

- Reversing the responder status of 24 out of 133 subjects for the adriamycin predictor in a manuscript submitted to *Clinical Cancer Research*
- switching the cancer recurrence phenotype for 46 out of 89 samples to validate the LMS predictor in a file provided to a colleague in 2008
- changing IC–50 and R-code values for the cisplatin predictor in a data set provided to NCI in 2010

3. Respondent reported predictors and/or their validation by disregarding accepted scientific methodology so that false data were reported in the following:

- *Blood* 107:1391–1396, 2006: Describing a predictor for thrombotic phenotypes
- *New England Journal of Medicine* 355:570–580, 2006: Describing a predictor of lung cancer relapse
- *Nature Medicine* 12:1294–1300, 2006: Describing a predictor for the response to the chemotherapeutic drugs topectan and docetaxol
- *Journal of Clinical Oncology* 25:4350–4357, 2007: Describing a predictor for the response to the chemotherapeutic drug cisplatin
- *Lancet Oncology* 8:1071–1078, 2007: Describing a predictor for the response to the combination of the chemotherapeutic drugs flurouracil, epirubicin, and cyclophosphamide or docetaxol, epirubicin, and docetaxol
- *Journal of the American Medical Association* 299:1574–1587, 2008: Describing a predictor for breast cancer relapse
- *Public Library Science One* 3:e1908, 2008: Describing a predictor for the response to the chemotherapeutic drugs paclitaxel, 5-fluouracil, adriamycin, and cyclophosphamide
- *Proceedings of the National Academy of Sciences* 105:19432–19437, 2008: Describing a predictor of colon cancer recurrence
- *Clinical Cancer Research* 15:7553–7561, 2009: Describing a predictor for the response to the chemotherapeutic drug cisplatin

As a result of Duke's investigation, the published papers listed above were retracted.

Respondent has entered into a Voluntary Settlement Agreement with ORI. Respondent neither admits nor denies ORI's findings of research misconduct; the settlement is not an admission of liability on the part of the Respondent. The parties entered into the Agreement to conclude this matter without further expenditure of time, finances, or other resources. Respondent has not applied for or engaged in U.S. Public Health Service (PHS)-supported research since 2010. Respondent stated that he has no intention of applying for or engaging in PHS-supported research or otherwise working with PHS. However, the Respondent voluntarily agreed:

(1) That if the respondent obtains employment in a research position in which he receives or applies for PHS support within five years of the effective date of the Agreement (September 23, 2015), he shall have his research supervised for a period of five years;

(2) that prior to the submission of an application for PHS support for a research project on which the Respondent's participation is proposed and prior to Respondent's participation in any capacity on PHS-supported research, Respondent shall ensure that a plan for supervision of Respondent's duties is submitted to ORI for approval; the supervision plan must be designed to ensure the scientific integrity of Respondent's research contribution; Respondent agreed that he shall not participate in any PHS-supported research until such a supervision plan is submitted to and approved by ORI; Respondent agreed to maintain responsibility for compliance with the agreed upon supervision plan;

(3) that any institution employing him shall submit, in conjunction with each application for PHS funds, or report, manuscript, or abstract involving PHS-supported research in which Respondent is involved, a certification to ORI that the data provided by Respondent are based on actual experiments or are otherwise legitimately derived and that the data, procedures, and methodology are accurately reported in the application, report, manuscript, or abstract; and

(4) to exclude himself voluntarily from serving in any advisory capacity to PHS including, but not limited to, service on any PHS advisory committee, board, and/or peer review committee, or as a consultant for period of five years beginning on September 23, 2015.

FOR FURTHER INFORMATION CONTACT: Acting Director, Division of Investigative Oversight, Office of Research Integrity, 1101 Wootton Parkway, Suite 750, Rockville, MD 20852, (240) 453–8200.

Donald Wright,

Acting Director, Office of Research Integrity.

[FR Doc. 2015–28437 Filed 11–6–15; 8:45 am]

BILLING CODE 4150–31–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Office of the Secretary

Findings of Research Misconduct; Correction

AGENCY: Office of the Secretary, HHS.

ACTION: Correction of notice.

SUMMARY: This document corrects an error that appeared in the notice published in the October 29, 2015, **Federal Register** entitled ''Findings of Research Misconduct.''

DATES: *Effective Date:* November 9, 2015.

Applicability Date: The correction notice is applicable for the Findings of Research Misconduct notice published on October 29, 2015.

FOR FURTHER INFORMATION CONTACT: Ms. Karen Gorirossi at 240–453–8800.

SUPPLEMENTARY INFORMATION:

I. Background

In FR Doc. 2015–27587 of October 29, 2015 (80 FR 66546), there was a sentence inadvertently omitted from the text of the notice. The error is identified and corrected in the Correction of Errors section below.

II. Correction of Errors

In FR Doc. 2015–27587 of October 29, 2015 (80 FR 66546), make the following correction:

1. On page 66546, second column, in FR Doc. 2015–27587, last paragraph, line 13, after ''otherwise working with PHS,'' add ''Respondent neither admits nor denies ORI's findings of research misconduct; the settlement is not an admission of liability on the part of the Respondent'' so that the corrected section of the last paragraph in the second column reads:

''Respondent stated that she is not currently involved in U.S. Public Health Service (PHS)-supported research and has no intention of applying for or engaging in PHS-supported research or otherwise working with PHS. Respondent neither admits nor denies ORI's findings of research misconduct; the settlement is not an admission of liability on the part of the Respondent.''

Dated: October 30, 2015.

Donald Wright,

Acting Director, Office of Research Integrity.

[FR Doc. 2015–28440 Filed 11–6–15; 8:45 am]

BILLING CODE 4150–31–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

National Institute of Mental Health; Notice of Closed Meetings

Pursuant to section 10(d) of the Federal Advisory Committee Act, as amended (5 U.S.C. App.), notice is hereby given of the following meetings.

The meetings will be closed to the public in accordance with the provisions set forth in sections 552b(c)(4) and 552b(c)(6), title 5 U.S.C., as amended. The grant applications and the discussions could disclose confidential trade secrets or commercial property such as patentable material, and personal information concerning individuals associated with the grant applications, the disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

Name of Committee: National Institute of Mental Health Special Emphasis Panel; Global Mental Health (U19).

Date: November 16, 2015.

Time: 8:00 a.m. to 5:00 p.m.

Agenda: To review and evaluate grant applications.

Place: Hotel Monaco, 700 F Street NW., Washington, DC 20001.

Contact Person: Karen Gavin-Evans, Ph.D., Scientific Review Officer, Division of Extramural Activities, National Institute of Mental Health, NIH, Neuroscience Center, 6001 Executive Boulevard, Room 6153, MSC 9606, Bethesda, MD 20892, 301–451–2356, *gavinevanskm@mail.nih.gov.*

This notice is being published less than 15 days prior to the meeting due to the timing limitations imposed by the review and funding cycle.

Name of Committee: National Institute of Mental Health Special Emphasis Panel; Research Education Programs (R25) for HIV/AIDS Research.

Date: November 20, 2015.

Time: 11:00 a.m. to 2:00 p.m.

Agenda: To review and evaluate grant applications.

Place: National Institutes of Health, Neuroscience Center, 6001 Executive Boulevard, Rockville, MD 20852, (Telephone Conference Call).

Contact Person: Aileen Schulte, Ph.D., Scientific Review Officer, Division of Extramural Activities, National Institute of Mental Health, NIH, Neuroscience Center, 6001 Executive Blvd., Room 6140, MSC 9608, Bethesda, MD 20892–9608, 301–443–1225, *aschulte@mail.nih.gov.*

Name of Committee: National Institute of Mental Health Special Emphasis Panel; Mental Health Services Conflicts.

Date: November 23, 2015.

Time: 1:00 p.m. to 2:30 p.m.

Agenda: To review and evaluate grant applications.

Place: National Institutes of Health, Neuroscience Center, 6001 Executive Boulevard, Rockville, MD 20852, (Telephone Conference Call).

Contact Person: Karen Gavin-Evans, Ph.D., Scientific Review Officer, Division of Extramural Activities, National Institute of Mental Health, NIH, Neuroscience Center, 6001 Executive Boulevard, Room 6153, MSC 9606, Bethesda, MD 20892, 301–451–2356, *gavinevanskm@mail.nih.gov.*

(Catalogue of Federal Domestic Assistance Program No. 93.242, Mental Health Research Grants, National Institutes of Health, HHS)

Dated: November 3, 2015.

Carolyn A. Baum,

Program Analyst, Office of Federal Advisory Committee Policy.

[FR Doc. 2015–28385 Filed 11–6–15; 8:45 am]

BILLING CODE 4140–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

National Institute on Drug Abuse; Notice of Closed Meeting

Pursuant to section 10(d) of the Federal Advisory Committee Act, as amended (5 U.S.C. App), notice is hereby given of the following meeting.

The meeting will be closed to the public in accordance with the provisions set forth in sections 552b(c)(4) and 552b(c)(6), Title 5 U.S.C., as amended. The grant applications and the discussions could disclose confidential trade secrets or commercial property such as patentable materials, and personal information concerning individuals associated with the grant applications, the disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

Name of Committee: National Institute on Drug Abuse Special Emphasis Panel; Multi-site Clinical Trials.

Date: November 23, 2015.

Time: 2:00 p.m. to 4:00 p.m.

Agenda: To review and evaluate grant applications.

Place: National Institutes of Health, Neuroscience Center, 6001 Executive Boulevard, Rockville, MD 20852, (Virtual Meeting).

Contact Person: Susan O. McGuire, Ph.D., Scientific Review Officer, Office of Extramural Affairs, National Institute on Drug Abuse, National Institutes of Health, DHHS, 6001 Executive Blvd., Room 4245, Rockville, MD 20852, 301–435–1426, *mcguireso@mail.nih.gov.*

Catalogue of Federal Domestic Assistance Program Nos.: 93.279, Drug Abuse and Addiction Research Programs, National Institutes of Health, HHS)

Dated: November 2, 2015.

Natasha Copeland,

Program Analyst, Office of Federal Advisory Committee Policy.

[FR Doc. 2015–28386 Filed 11–6–15; 8:45 am]

BILLING CODE 4140–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Eunice Kennedy Shriver National Institute of Child Health And Human Development; Notice of Closed Meeting

Pursuant to section 10(d) of the Federal Advisory Committee Act, as amended (5 U.S.C. App.), notice is hereby given of the following meeting.

The meeting will be closed to the public in accordance with the provisions set forth in section 552b(c)(4) and 552b(c)(6), Title 5 U.S.C., as amended. The grant applications and the discussions could disclose confidential trade secrets or commercial property such as patentable material, and personal information concerning individuals associated with the grant applications, the disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

Name of Committee: National Institute of Child Health and Human Development Special Emphasis Panel, Neurodevelopmental Assessment of Infants and Children in Resource-Limited Settings.

Date: November 19, 2015.

Time: 1:00 p.m. to 4:00 p.m.

Agenda: To review and evaluate grant applications.

Place: National Institutes of Health, 6100 Executive Boulevard, Rockville, MD 20852 (Telephone Conference Call).

Contact Person: Sathasiva B. Kandasamy, Ph.D., Scientific Review Officer, Scientific Review Branch, Eunice Kennedy Shriver National Institute of Child Health and Human Development, NIH, 6100 Executive Boulevard, Room 5B01, Bethesda, MD 20892–9304, (301) 435–6680, *skandasa@mail.nih.gov.*

This notice is being published less than 15 days prior to the meeting due to the timing limitations imposed by the review and funding cycle.

(Catalogue of Federal Domestic Assistance Program Nos. 93.864, Population Research; 93.865, Research for Mothers and Children; 93.929, Center for Medical Rehabilitation Research; 93.209, Contraception and Infertility Loan Repayment Program, National Institutes of Health, HHS)

Dated: November 3, 2015.

Michelle Trout,

Program Analyst, Office of Federal Advisory Committee Policy.

[FR Doc. 2015–28383 Filed 11–6–15; 8:45 am]

BILLING CODE 4140–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Center for Scientific Review; Notice of Closed Meetings

Pursuant to section 10(d) of the Federal Advisory Committee Act, as amended (5 U.S.C. App.), notice is hereby given of the following meetings.

The meetings will be closed to the public in accordance with the provisions set forth in sections 552b(c)(4) and 552b(c)(6), Title 5 U.S.C., as amended. The grant applications and the discussions could disclose confidential trade secrets or commercial property such as patentable material, and personal information concerning individuals associated with the grant applications, the disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

Name of Committee: Center for Scientific Review Special Emphasis Panel; Member Conflict: Infectious, Reproductive, Asthma and Pulmonary Epidemiology.

Date: November 13, 2015.

Time: 1:30 p.m. to 3:00 p.m.

Agenda: To review and evaluate grant applications.

Place: National Institutes of Health, 6701 Rockledge Drive, Bethesda, MD 20892 (Telephone Conference Call).

Contact Person: Denise Wiesch, Ph.D., Scientific Review Officer, Center for Scientific Review, National Institutes of Health, 6701 Rockledge Drive, Room 3138, MSC 7770, Bethesda, MD 20892, (301) 437–3478, *wieschd@csr.nih.gov.*

This notice is being published less than 15 days prior to the meeting due to the timing limitations imposed by the review and funding cycle.

Name of Committee: Center for Scientific Review Special Emphasis Panel; Program Project: Multi-Use Knowledge Base and Computational Modeling of Human Metabolism.

Date: December 3, 2015.

Time: 1:00 p.m. to 4:00 p.m.

Agenda: To review and evaluate grant applications.

Place: National Institutes of Health, 6701 Rockledge Drive, Bethesda, MD 20892 (Virtual Meeting).

Contact Person: Amy L Rubinstein, Ph.D., Scientific Review Officer, Center for Scientific Review, National Institutes of Health, 6701 Rockledge Drive, Room 5152, MSC 7844, Bethesda, MD 20892, 301–408–9754, *rubinsteinal@csr.nih.gov.*

Name of Committee: Center for Scientific Review Special Emphasis Panel; Program Project: National Resource for Challenges in RNA Research.

Date: December 6–8, 2015.

Time: 7:00 p.m. to 12:00 p.m.

Agenda: To review and evaluate grant applications,

Place: Courtyard Albany Thruway, 1455 Washington Ave., Albany, NY 12206.

Contact Person: Barbara J. Thomas, Ph.D., Scientific Review Officer, Center for Scientific Review, National Institutes of Health, 6701 Rockledge Drive, Room 2218, MSC 7890, Bethesda, MD 20892, 301–435–0603, *bthomas@csr.nih.gov.*

(Catalogue of Federal Domestic Assistance Program Nos. 93.306, Comparative Medicine; 93.333, Clinical Research, 93.306, 93.333, 93.337, 93.393–93.396, 93.837–93.844, 93.846–93.878, 93.892, 93.893, National Institutes of Health, HHS)

Dated: November 3, 2015.

Natasha Copeland,

Program Analyst, Office of Federal Advisory Committee Policy.

[FR Doc. 2015–28384 Filed 11–6–15; 8:45 am]

BILLING CODE 4140–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Substance Abuse and Mental Health Services Administration

Agency Information Collection Activities: Proposed Collection; Comment Request

In compliance with section 3506(c)(2)(A) of the Paperwork Reduction Act of 1995 concerning opportunity for public comment on proposed collections of information, the Substance Abuse and Mental Health Services Administration (SAMHSA) will publish periodic summaries of proposed projects. To request more information on the proposed projects or to obtain a copy of the information collection plans, call the SAMHSA Reports Clearance Officer at (240) 276–1243.

Comments are invited on (a) whether the proposed collections of information are necessary for the proper performance of the functions of the agency, including whether the information shall have practical utility; (b) the accuracy of the agency's estimate of the burden of the proposed collection of information; (c) ways to enhance the quality, utility, and clarity of the information to be collected; and (d) ways to minimize the burden of the collection of information on respondents, including through the use of automated collection techniques or other forms of information technology (IT).

Proposed Project: Screening, Brief Intervention, and Referral to Treatment (SBIRT) Cross-Site Evaluation—New

SAMHSA is conducting a cross-site external evaluation of the impact of programs of screening, brief intervention (BI), brief treatment (BT), and referral to treatment (RT) on patients presenting at various health care delivery units with a continuum of severity of substance use. SAMHSA's SBIRT program is a cooperative agreement grant program designed to help states and Tribal Councils expand the continuum of care available for substance misuse and use disorders. The program includes screening, BI, BT, and RT for persons at risk for dependence on alcohol or drugs. This evaluation will provide a comprehensive assessment of SBIRT implementation; the effects of SBIRT on patient outcomes, performance site practices, and treatment systems; and the sustainability of the program. This information will allow SAMHSA to determine the extent to which SBIRT has met its objectives of implementing a comprehensive system of identification and care to meet the needs of individuals at all points along the substance use continuum.

To evaluate the success of SBIRT implementation at the site level, a web-based survey will be administered to staff in sites where SBIRT services are being delivered—referred to as performance sites. The Performance Site Survey will be distributed to individuals who directly provide SBIRT services and staff who interact regularly with SBIRT providers and patients receiving SBIRT services. The types of staff surveyed will include intake staff, medical providers, behavioral health providers, social workers, and managerial and administrative staff who oversee these staff. Since cross-site evaluation team members will be traveling to selected SBIRT providers and coordinating with state and site administrators on a yearly basis, there is an opportunity to complete a near-census of all SBIRT-related staff at performance sites with a minimal level of burden.

The 78 question web survey includes the collection of basic demographic information, questions about the organization's readiness to implement SBIRT, and questions about the use of health information technology (HIT) to deliver SBIRT services. The demographic questions were tailored from a previous cross-site evaluation survey to fit the current set of cross-site grantees. The organizational readiness questions were developed through a review of the extant implementation science research literature (*e.g.,* Chaudoir, Dugan, & Barr, 2013; Damschroder et al., 2009; Garner, 2009; Greenhalgh, MacFarlane, & Kyriakidou, 2004; Weiner, 2009; Weiner, Belden, Bergmire, & Johnston, 2011). Based on this review, the Organizational Readiness for Implementation Change (ORIC) (Shea, Jacobs, Esserman, Bruce, & Weiner, 2014) and the Implementation Climate Scale (ICS) (Jacobs, Weiner, & Bunger, 2014) were identified as the two most appropriate instruments. In addition to questions from these two instruments, the survey includes questions to assess satisfaction, capacity, and infrastructure to implement SBIRT screening, BI, and BT.

To identify relevant HIT measures, the cross-site evaluation team modified measures from socio-technical frameworks (Kling, 1980), including the DeLone and McClean framework (DeLone & McLean, 2004), the Public Health Informatics Institute Framework (PHII, 2005), and the Human Organization and Technology (Hot)-FIT Framework (Yusof, 2008). Across these three frameworks, the survey captures measures of system availability, information availability, organizational structure and environment, utilization, and user satisfaction.

TOTAL BURDEN HOURS FOR THE PERFORMANCE SITE SURVEY

Respondent	Number of respondents (a)	Number of responses/respondent	Total number of responses	Hours per response (b)	Annual burden hours
Intake/front desk staff	215	1	215	0.22	47.30
Performance site administrators	191	1	191	0.22	42.02
Clinical supervisors	101	1	101	0.22	22.22
Medical providers	571	1	571	0.22	125.62
Behavioral health providers	211	1	211	0.22	46.42
Social workers	118	1	118	0.22	25.96
Total	1,407		1,407		309.54

(a) The maximum number of annual respondents has been based on an estimates from cross-site evaluation site visits.
(b) The average burden per response was estimated based on independent review of the instrument by contractor staff.

Send comments to Summer King, SAMHSA Reports Clearance Officer, Room 2–1057, One Choke Cherry Road, Rockville, MD 20857 *OR* email a copy to *summer.king@samhsa.hhs.gov.*

Written comments should be received by January 8, 2016.

Summer King,

Statistician.

[FR Doc. 2015–28415 Filed 11–6–15; 8:45 am]

BILLING CODE 4162–20–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Substance Abuse and Mental Health Services Administration

Agency Information Collection Activities: Proposed Collection; Comment Request

In compliance with Section 3506(c)(2)(A) of the Paperwork Reduction Act of 1995 concerning opportunity for public comment on proposed collections of information, the Substance Abuse and Mental Health Services Administration (SAMHSA) will publish periodic summaries of proposed projects. To request more information on the proposed projects or to obtain a copy of the information collection plans, call the SAMHSA Reports Clearance Officer on (240) 276–1243.

Comments are invited on: (a) Whether the proposed collections of information are necessary for the proper performance of the functions of the agency, including whether the information shall have practical utility; (b) the accuracy of the agency's estimate of the burden of the proposed collection of information; (c) ways to enhance the quality, utility, and clarity of the information to be collected; and (d) ways to minimize the burden of the collection of information on respondents, including through the use of automated collection techniques or other forms of information technology.

Proposed Project: Quarterly Progress Reporting and Annual Indirect Services Outcome Data Collection for the Minority Substance Abuse/HIV Prevention Program (MAI)—NEW

The Substance Abuse and Mental Health Services Administration (SAMHSA), Center for Substance Abuse Prevention (CSAP) is requesting approval from the Office of Management and Budget (OMB) for the collection of quarterly progress information and annual community-level outcome data from CSAP's Minority AIDS Initiative (MAI) programs.

This data collection effort supports two of SAMHSA's 6 Strategic Initiatives: Prevention of Substance Abuse and Mental Illness and Health Care and Health Systems Integration. The grantees funded by the MAI and included in this clearance request are:

- Minority Serving Institutions (MSI) in Partnerships with Community-Based Organizations (CBO): 84 grantees funded up to three years;
- Capacity Building Initiative (CBI): 74 grantees funded up to five years.

MSI CBO grantees are Historically Black Colleges/Universities, Hispanic Serving Institutions, American Pacific Islander Serving Institutions, or Tribal Colleges/Universities in partnership with community based organizations in their surrounding communities. MSI CBO grantees are required to provide integrated substance abuse (SA), Hepatitis C (HCV), and HIV prevention services to young adults. The CBI grantees are community-level domestic, public and private nonprofit entities, federally recognized American Indian/Alaska Native Tribes and tribal organizations, and urban Indian organizations. CBI grantees will use grant funds for building a solid infrastructure for integrated SA, HIV, and HCV prevention service provision and implementing evidence-based prevention interventions using SAMHSA's Strategic Prevention Framework (SPF) process. The target population for the CBI grantees will be at-risk minority adolescents and young adults. All MAI grantees are expected to provide leadership and coordination on the planning and implementation of the SPF and to target minority populations, as well as other high risk groups residing in communities of color with high prevalence of SA and HIV/AIDS.

The MAI grantees are expected to provide an effective prevention process, direction, and a common set of goals, expectations, and accountabilities to be adapted and integrated at the community level. Grantees have substantial flexibility in choosing their individual evidence-based programs, but must base this selection on and build it into the five steps of the SPF. These SPF steps consist of assessing local needs, building service capacity specific to SA and HIV prevention services, developing a strategic prevention plan, implementing evidence-based interventions, and evaluating their outcomes. Grantees are also required to provide HIV and HCV testing and counseling services and referrals to appropriate treatment options. Grantees must also conduct ongoing monitoring and evaluation of their projects to assess program effectiveness including Federal reporting of the Government Performance and Results Act (GPRA) of 1993, The GPRA Modernization Act of 2010, SAMHSA/CSAP National Outcome Measures (NOMs), and the Department of Health and Human Services Core HIV Indicators.

The primary objectives of this data collection effort are to:

- Ensure the correct implementation of the five steps of the SPF process by maintaining a continuous feedback loop between grantees and their POs;
- Promptly respond to grantees' needs for training and technical assistance;
- Assess the fidelity with which the SPF is implemented;
- Collect aggregate data on HIV testing to fulfill SAMHSA's reporting and accountability obligations as defined by the Government Performance and Results Modernization Act (GPRA Modernization Act) and HHS's HIV Core Measures;
- Assess the success of the MAI in reducing risk factors and increasing protective factors associated with the transmission of the Human Immunodeficiency Virus (HIV), Hepatitis C Virus (HCV) and other sexually-transmitted diseases (STD);
- Measure the effectiveness of evidence-based programs and infrastructure development activities such as: outreach and training, mobilization of key stakeholders, substance abuse and HIV/AIDS counseling and education, testing, referrals to appropriate medical treatment, and other intervention strategies (*e.g.,* cultural enrichment activities, educational and vocational resources, motivational interviewing & brief interventions, social marketing, and computer-based curricula);
- Investigate intervention types and features that produce the best outcomes for specific population groups;
- Assess the extent to which access to health care was enhanced for population groups and individuals vulnerable to behavioral health disparities residing in communities targeted by funded interventions;

These objectives support the four primary goals of the National HIV/AIDS Strategy which are: (1) Reducing new HIV infections, (2) increasing access to care and improving health outcomes for people living with HIV/AIDS, (3) reducing HIV-related disparities and health inequities, and (4) achieving a coordinated national response to the HIV epidemic.

The Quarterly Progress Reporting (QPR) Tool is a modular instrument structured around the SPF. Each section or module corresponds to a SPF step with an additional section dedicated to cultural competence and efforts to address behavioral health disparities, which is an overarching principle of the framework guiding every step. Grantees provide quarterly reports of their progress through the SPF. Each quarter's report consists of updates to the module(s) corresponding to the SPF steps that the grantee worked on during that quarter. Grantees are required to report on their activities, accomplishments, and barriers associated with cultural competence and reduction of health disparities twice a year, as part of the second- and fourth-quarter progress reports. Data on HIV/HCV testing and hepatitis vaccination are reported only in the aggregate (*e.g.* numbers tested and percent of tests that were positive). No individual-level information is collected through this instrument.

The Indirect Services Outcomes Data Tool collects annual data on community-level outcome measures. These data typically come from existing sources such as ongoing community surveys and administrative data collected by local agencies and institutions such as law enforcement, school districts, college campuses, hospitals, and health departments. The data are submitted to SAMHSA in the form of community-level averages, percentages, or rates, and are used to assess the grantees' success in changing community norms, policies, practices, and systems through environmental strategies and information dissemination activities. As with the QPR, no individual-level information is collected through this instrument.

The third data collection instrument for which approval is being sought is intended to collect FY 2015 data on the HIV testing activities of the grantees. It will be used once only, immediately after the system goes online, in order to collect data for two of the seven HHS Core Indicators that SAMHSA/CSAP has agreed to report. Although this statement refers to it as a separate instrument for purposes of clarity in burden estimation, it has the same data fields as the HIV Testing Implementation section of the main Quarterly Progress Report tool and differs only in its reporting timeframe.

Although the main purpose of this data collection effort is to provide a standard and efficient system for SAMHSA's project officers to maintain a feedback loop with the grantees that they manage and to respond to training and technical assistance needs in a timely fashion, the data will also be incorporated into the national cross-site evaluation. By combining this grantee-level implementation information and community-level outcome data with participant-level pre-post data, SAMHSA will be able to identify interventions and intervention combinations that produce the most favorable outcomes at the individual and community levels, and to investigate the interaction between participant- and grantee-level factors in predicting positive outcomes.

Respondent burden has been limited to the extent possible while allowing SAMHSA project officers to effectively manage, monitor, and provide sufficient guidance to their grantees, and for the cross-site evaluation to reliably assess program outcomes and successful strategies. The following table displays estimates of the annualized burden for data collected through the Quarterly Progress Reporting and Indirect Services outcomes data collection tools.

ESTIMATES OF ANNUALIZED HOUR BURDEN

EXHIBIT 1—TOTAL ESTIMATED ANNUALIZED BURDEN BY INSTRUMENT

Type of respondent activity	Number of respondents	Responses per respondent	Total responses	Hours per response	Total burden hours	Wage rate	Total hour cost
Quarterly Progress Report	158	4	632	4	2,528	$21.79	$55,085
Indirect Services Outcomes	158	1	158	2	316	21.79	6,886
HIV Testing Retrospective Reporting Tool	50	1/3	16.67	0.25	4.17	21.79	91
Total	158		806.67		2,848		62,062

Send comments to Summer King, SAMHSA Reports Clearance Officer, Room 2–1057, One Choke Cherry Road, Rockville, MD 20857 or email her a copy at *summer.king@samhsa.hhs.gov.* Written comments should be received by January 8, 2016.

Summer King,

Statistician.

[FR Doc. 2015–28368 Filed 11–6–15; 8:45 am]

BILLING CODE 4162–20–P

DEPARTMENT OF HOMELAND SECURITY

Coast Guard

[Docket No. USCG–2013–0864]

Certificate of Alternative Compliance for the M/V LEIGH ANN MORAN, 1261986

AGENCY: Coast Guard, DHS.

ACTION: Notice.

SUMMARY: The Coast Guard announces that a Certificate of Alternative Compliance was issued for the Uninspected Towing Vessel LEIGH ANN MORAN as required by statute.

DATES: The Certificate of Alternative Compliance was issued on September 28, 2015.

ADDRESSES: The docket for this notice is available for inspection or copying at the Docket Management Facility (M–30), U.S. Department of Transportation, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. You may also find this docket on the Internet by going to *http://www.regulations.gov,* inserting USCG–2011–0508 in the ''Keyword'' box, and then clicking ''Search.''

FOR FURTHER INFORMATION CONTACT: If you have questions on this notice, call LT Steven Melvin, District Nine, Prevention Branch, U.S. Coast Guard, telephone 216–902–6343. If you have questions on viewing or submitting material to the docket, call Renee V. Wright, Program Manager, Docket Operations, telephone 202–366–9826.

SUPPLEMENTARY INFORMATION:

Background and Purpose

A Certificate of Alternative Compliance, as allowed for under 33 U.S.C. 1605 (c) and 33 CFR 81.18, has been issued for the M/V LEIGH ANN MORAN. The vessel's primary purpose is a to push a barge that will operate on mainly in the Gulf of Mexico. The unique design of the vessel did not lend itself to full compliance with Annex I of the Inland Rules Act.

The Commandant, U.S. Coast Guard, certifies that full compliance with the Inland Rules Act would interfere with the special functions/intent of the vessel and would not significantly enhance the safety of the vessel's operation. Placing the sidelights in the required position would interfere with the standard tug operations of the vessel.

The Certificate of Alternative Compliance authorizes the M/V LEIGH ANN MORAN to deviate from the requirements set forth in Annex I of the Inland Rules Act, and install the sidelights as shown on the JENSEN Naval Architects and Marine Engineers ''NAV MAST STRUCT & LIGHT ARGMT'' Drawing No. 170–01, Rev A, dated October 30, 2014.

This notice is issued under authority of 33 U.S.C. 1605(c), and 33 CFR 81.18.

Dated: October 20, 2015.

P.D.J. Arnett,

Captain, U.S. Coast Guard, Chief, Prevention Division, By Direction.

[FR Doc. 2015–28480 Filed 11–6–15; 8:45 am]

BILLING CODE 9110–04–P

DEPARTMENT OF HOMELAND SECURITY

Federal Emergency Management Agency

[Internal Agency Docket No. FEMA–4241–DR; Docket ID FEMA–2015–0002]

South Carolina; Amendment No. 10 to Notice of a Major Disaster Declaration

AGENCY: Federal Emergency Management Agency, DHS.

ACTION: Notice.

SUMMARY: This notice amends the notice of a major disaster declaration for the State of South Carolina (FEMA–4241–DR), dated October 5, 2015, and related determinations.

DATES: *Effective Date:* October 26, 2015.

FOR FURTHER INFORMATION CONTACT: Dean Webster, Office of Response and Recovery, Federal Emergency Management Agency, 500 C Street SW., Washington, DC 20472, (202) 646–2833.

SUPPLEMENTARY INFORMATION: The notice of a major disaster declaration for the State of South Carolina is hereby amended to include the following areas among those areas determined to have been adversely affected by the event declared a major disaster by the President in his declaration of October 5, 2015.

Allendale, Beaufort, Lancaster, and Marlboro Counties for Public Assistance.

The following Catalog of Federal Domestic Assistance Numbers (CFDA) are to be used for reporting and drawing funds: 97.030, Community Disaster Loans; 97.031, Cora Brown Fund; 97.032, Crisis Counseling; 97.033, Disaster Legal Services; 97.034, Disaster Unemployment Assistance (DUA); 97.046, Fire Management Assistance Grant; 97.048, Disaster Housing Assistance to Individuals and Households In Presidentially Declared Disaster Areas; 97.049, Presidentially Declared Disaster Assistance—Disaster Housing Operations for Individuals and Households; 97.050 Presidentially Declared Disaster Assistance to Individuals and Households—Other Needs; 97.036, Disaster Grants—Public Assistance (Presidentially Declared Disasters); 97.039, Hazard Mitigation Grant.

W. Craig Fugate,

Administrator, Federal Emergency Management Agency.

[FR Doc. 2015–28373 Filed 11–6–15; 8:45 am]

BILLING CODE 9111–23–P

DEPARTMENT OF HOMELAND SECURITY

Federal Emergency Management Agency

[Internal Agency Docket No. FEMA–4241–DR; Docket ID FEMA–2015–0002]

South Carolina; Amendment No. 11 to Notice of a Major Disaster Declaration

AGENCY: Federal Emergency Management Agency, DHS.

ACTION: Notice.

SUMMARY: This notice amends the notice of a major disaster declaration for the State of South Carolina (FEMA–4241–DR), dated October 5, 2015, and related determinations.

DATES: *Effective Date:* October 27, 2015.

FOR FURTHER INFORMATION CONTACT: Dean Webster, Office of Response and Recovery, Federal Emergency Management Agency, 500 C Street SW., Washington, DC 20472, (202) 646–2833.

SUPPLEMENTARY INFORMATION: The notice of a major disaster declaration for the State of South Carolina is hereby amended to include the following areas among those areas determined to have been adversely affected by the event declared a major disaster by the President in his declaration of October 5, 2015.

Greenville and Spartanburg Counties for Individual Assistance.

The following Catalog of Federal Domestic Assistance Numbers (CFDA) are to be used for reporting and drawing funds: 97.030, Community Disaster Loans; 97.031, Cora Brown Fund; 97.032, Crisis Counseling; 97.033, Disaster Legal Services; 97.034, Disaster Unemployment Assistance (DUA); 97.046, Fire Management Assistance Grant; 97.048, Disaster Housing Assistance to Individuals and Households In Presidentially Declared Disaster Areas; 97.049, Presidentially Declared Disaster Assistance—Disaster Housing Operations for Individuals and Households; 97.050 Presidentially Declared Disaster Assistance to Individuals and Households—Other Needs; 97.036, Disaster Grants—Public Assistance (Presidentially Declared Disasters); 97.039, Hazard Mitigation Grant.

W. Craig Fugate,

Administrator, Federal Emergency Management Agency.

[FR Doc. 2015–28374 Filed 11–6–15; 8:45 am]

BILLING CODE 9111–23–P

DEPARTMENT OF HOMELAND SECURITY

Federal Emergency Management Agency

[Internal Agency Docket No. FEMA–3373–EM; Docket ID FEMA–2015–0002]

South Carolina; Amendment No. 1 to Notice of an Emergency Declaration

AGENCY: Federal Emergency Management Agency, DHS.

ACTION: Notice.

SUMMARY: This notice amends the notice of an emergency declaration for the State of South Carolina (FEMA–3373–EM), dated October 3, 2015, and related determinations.

DATES: *Effective Date:* October 23, 2015.

FOR FURTHER INFORMATION CONTACT: Dean Webster, Office of Response and Recovery, Federal Emergency Management Agency, 500 C Street SW., Washington, DC 20472, (202) 646–2833.

SUPPLEMENTARY INFORMATION: Notice is hereby given that the incident period for this emergency is closed effective October 23, 2015.

The following Catalog of Federal Domestic Assistance Numbers (CFDA) are to be used for reporting and drawing funds: 97.030, Community Disaster Loans; 97.031, Cora Brown Fund; 97.032, Crisis Counseling; 97.033, Disaster Legal Services; 97.034, Disaster Unemployment Assistance (DUA); 97.046, Fire Management Assistance Grant; 97.048, Disaster Housing Assistance to Individuals and Households In Presidentially Declared Disaster Areas; 97.049, Presidentially Declared Disaster Assistance—Disaster Housing Operations for Individuals and Households; 97.050, Presidentially Declared Disaster Assistance to Individuals and Households—Other Needs; 97.036, Disaster Grants—Public Assistance (Presidentially Declared Disasters); 97.039, Hazard Mitigation Grant.

W. Craig Fugate,

Administrator, Federal Emergency Management Agency.

[FR Doc. 2015–28375 Filed 11–6–15; 8:45 am]

BILLING CODE 9111–23–P

DEPARTMENT OF HOMELAND SECURITY

Federal Emergency Management Agency

[Internal Agency Docket No. FEMA–4241–DR; Docket ID FEMA–2015–0002]

South Carolina; Amendment No. 9 to Notice of a Major Disaster Declaration

AGENCY: Federal Emergency Management Agency, DHS.

ACTION: Notice.

SUMMARY: This notice amends the notice of a major disaster declaration for the State of South Carolina (FEMA–4241–DR), dated October 5, 2015, and related determinations.

DATES: *Effective Date:* October 23, 2015.

FOR FURTHER INFORMATION CONTACT: Dean Webster, Office of Response and Recovery, Federal Emergency Management Agency, 500 C Street SW., Washington, DC 20472, (202) 646–2833.

SUPPLEMENTARY INFORMATION: Notice is hereby given that the incident period for this disaster is closed effective October 23, 2015.

The following Catalog of Federal Domestic Assistance Numbers (CFDA) are to be used for reporting and drawing funds: 97.030, Community Disaster Loans; 97.031, Cora Brown Fund; 97.032, Crisis Counseling; 97.033, Disaster Legal Services; 97.034, Disaster Unemployment Assistance (DUA); 97.046, Fire Management Assistance Grant; 97.048, Disaster Housing Assistance to Individuals and Households In Presidentially Declared Disaster Areas; 97.049, Presidentially Declared Disaster Assistance—Disaster Housing Operations for Individuals and Households; 97.050, Presidentially Declared Disaster Assistance to Individuals and Households—Other Needs; 97.036, Disaster Grants—Public Assistance (Presidentially Declared Disasters); 97.039, Hazard Mitigation Grant.

W. Craig Fugate,

Administrator, Federal Emergency Management Agency.

[FR Doc. 2015–28372 Filed 11–6–15; 8:45 am]

BILLING CODE 9111–23–P

DEPARTMENT OF HOMELAND SECURITY

[Docket No. ICEB–XXXX]

RIN 1653–ZA09

Employment Authorization for Nepali F–1 Students Experiencing Severe Economic Hardship as a Direct Result of the April 25, 2015 Earthquake in the Federal Democratic Republic of Nepal

AGENCY: U.S. Immigration and Customs Enforcement; Department of Homeland Security.

ACTION: Notice.

SUMMARY: This notice announces that the Secretary of Homeland Security (Secretary) has suspended certain regulatory requirements for F–1 nonimmigrant students whose country of citizenship is the Federal Democratic Republic of Nepal (hereinafter ''Nepal'') and who are experiencing severe economic hardship as a direct result of the earthquake in the Federal Democratic Republic of Nepal on April 25, 2015.

The Secretary is taking action to provide relief to these Nepali citizens who are F–1 students so they may request employment authorization, work an increased number of hours while school is in session, and reduce their course load while continuing to maintain their F–1 student status. The Department of Homeland Security (DHS) will deem an F–1 student who receives employment authorization by means of this notice to be engaged in a ''full course of study'' for the duration of the employment authorization, if the student satisfies the minimum course load requirement described in this notice.

DATES: This notice is effective November 9, 2015 and will remain in effect until December 24, 2016.

FOR FURTHER INFORMATION CONTACT: Louis Farrell, Director, Student and Exchange Visitor Program; U.S. Immigration and Customs Enforcement, 500 12th Street SW., Stop 5600, Washington, DC 20536–5600; email: *sevp@ice.dhs.gov*, telephone: (703) 603–3400. This is not a toll-free number. Program information is available at *http://www.ice.gov/sevis/.*

SUPPLEMENTARY INFORMATION:

What action is DHS taking under this notice?

The Secretary is exercising his authority under 8 CFR 214.2(f)(9) to temporarily suspend the applicability of certain requirements governing on-campus and off-campus employment for F–1 nonimmigrant students whose country of citizenship is the Federal Democratic Republic of Nepal (Nepal) and who are experiencing severe economic hardship as a direct result of the earthquake in Nepal on April 25, 2015. DHS will deem an F–1 student granted employment authorization by means of this notice to be engaged in a ''full course of study'' for the duration of the employment authorization, if the student satisfies the minimum course load set forth in this notice. *See* 8 CFR 214.2(f)(6)(i)(F).

Who is covered by this notice?

This notice applies exclusively to F–1 nonimmigrant students who meet all of the following conditions:

(1) Are a citizen of Nepal;

(2) Was lawfully present in the United States in F–1 nonimmigrant status on April 25, 2015, under section 101(a)(15)(F)(i) of the Immigration and Nationality Act (INA), 8 U.S.C. 1101(a)(15)(F)(i);

(3) Are enrolled in a school that is Student and Exchange Visitor Program (SEVP)-certified for enrollment for F–1 students;

(4) Are currently maintaining F–1 status; and

(5) Are experiencing severe economic hardship as a direct result of the damage caused by the earthquake of April 25, 2015.

This notice applies to undergraduate and graduate students, private kindergarten through grade 12 (K–12) students, and public and private high school students. An F–1 student covered by this notice who transfers to another school that is SEVP-certified for enrollment of F–1 students remains eligible for the relief provided by means of this notice.

Why is DHS taking this action?

DHS is taking action to provide relief to the Nepali F–1 students experiencing severe economic hardship as a direct result of the earthquake in Nepal in April 2015. These students may request employment authorization, work an increased number of hours while school is in session, and reduce their course load while continuing to maintain their F–1 status.

The April 25th 7.8 magnitude earthquake and its aftershocks caused enormous damage in Nepal's vulnerable urban areas, as well as to its rural areas that are difficult to access because of the mountainous terrain and limited numbers of undamaged roads. The earthquake has negatively affected the whole economy of Nepal. Approximately 25 to 33 percent of Nepal's population of over 8 million people in 39 of Nepal's 75 districts have been affected by the earthquake and its aftershocks, which caused over 8,000 fatalities and more than 17,000 injuries, displacing over 2.8 million people from their homes. The country's critical infrastructure was severely damaged, and many government offices, schools, businesses, and hospitals were completely destroyed. Food security is jeopardized with over 3.5 million people estimated to be in need of food assistance. Displaced persons have varying access to basic services, such as shelter, water, sanitation, and hygiene, as well as medical care. At least 950,000 children in Nepal are at risk of being unable to return to school because their schools have been destroyed, damaged, or are being used as temporary shelters. The institutional capacity of the Nepali government to respond to the immediate effects of the earthquake is inadequate, and the Government of Nepal has issued a $2 billion appeal for the Nepal Reconstruction and Rehabilitation Fund.

Approximately 9326F–1 students from Nepal are enrolled in courses at U. S. schools as of September 19, 2015. Given the extent of the destruction and humanitarian challenges in Nepal, affected students whose primary means of financial support comes from Nepal now may need to be exempt from the normal student employment requirements to continue their studies in the United States. The widespread disaster has made it unfeasible for many students to safely return to Nepal for the foreseeable future. Without employment authorization, these students may lack the means to meet basic living expenses.

What is the minimum course load requirement set forth in this notice?

Undergraduate students who receive on-campus or off-campus employment authorization under this notice must remain registered for a minimum of six credit hours of instruction per academic semester.[1] A graduate-level F–1 student who receives on-campus or off-campus employment authorization under this notice must remain registered for a minimum of three credit hours of instruction per academic semester. *See* 8 CFR 214.2(f)(5)(v).

In addition, an F–1 student (either undergraduate or graduate) granted on-campus or off-campus employment authorization under this notice may count up to the equivalent of one course or three credits per semester of online or distance education toward satisfying this minimum course load requirement, unless the student's course of study is in an English language study program. *See* 8 CFR 214.2(f)(6)(i)(G). At an elementary, middle, or high school, an F–1 student must maintain "class attendance for not less than the minimum number of hours a week prescribed by the school for normal progress toward graduation," as required under 8 CFR 214.2(f)(6)(i)(E).

May an eligible F–1 student who already has on-campus or off-campus employment authorization benefit from the suspension of regulatory requirements under this notice?

Yes. A Nepali F–1 student who already has on-campus or off-campus employment authorization may benefit under this notice, which suspends regulatory requirements relating to the minimum course load requirement under 8 CFR 214.2(f)(6)(i)(A) and (B) and the employment eligibility requirements under 8 CFR 214.2(f)(9) as specified in this notice. Such an eligible F–1 student may benefit without having to apply for a new Form I–766, Employment Authorization Document (EAD). To benefit from this notice, the student must request that his or her designated school official (DSO) enter the following statement in the remarks field of the student's Student and Exchange Visitor Information System (SEVIS) record, which the student's Form I–20, Certificate of Eligibility for Nonimmigrant (F–1) Student Status, will reflect:

> Approved for more than 20 hours per week of [DSO must insert "on-campus" or "off-campus," depending upon the type of employment authorization the student already has] employment authorization and reduced course load under the Special Student Relief authorization from [DSO must insert the beginning date of employment] until [DSO must insert the student's program end date, December 24, 2016, or the current EAD expiration date (if the student is currently authorized off-campus employment), whichever date comes first].

Must the F–1 student apply for reinstatement after expiration of this special employment authorization if the student reduces his or her "full course of study"?

No. DHS will deem an F–1 student who receives employment authorization under this notice to be engaged in a "full course of study" for the duration of the employment authorization, provided that a qualifying undergraduate level F–1 student remains registered for a minimum of six credit hours of instruction per academic semester and a qualifying graduate level F–1 student remains registered for a minimum of three credit hours of instruction per academic semester. *See* 8 CFR 214.2(f)(5)(v) and (f)(6)(i)(F). DHS will not require such students to apply for reinstatement under 8 CFR 214.2(f)(16) if otherwise maintaining F–1 status.

Will an F–2 dependent (spouse or minor child) of an F–1 student covered by this notice be eligible to apply for employment authorization?

No. An F–2 spouse or minor child of an F–1 student does not have authorization to work in the United States and, therefore, may not accept employment under the F–2 status. *See* 8 CFR 214.2(f)(15)(i).

Will the suspension of the applicability of the standard student employment requirements apply to an alien who receives an F–1 visa after publication of this notice in the Federal Register?

No. The suspension of the applicability of the standard regulatory requirements only applies to those F–1 students who meet the following conditions:

(1) Are a citizen of Nepal;

(2) Was lawfully present in the United States in F–1 nonimmigrant status on April 25, 2015, under section 101(a)(15)(F)(i) of the INA, 8 U.S.C. 1101(a)(15)(F)(i);

(3) Are enrolled in a school that is SEVP-certified for enrollment for F–1 students;

(4) Are currently maintaining F–1 status; and

(5) Are experiencing severe economic hardship as a direct result of the damage caused by the earthquake of April 25, 2015.

Even if experiencing severe economic hardship as a direct result of the damage caused by the earthquake, an F–1 student who does not meet all of these requirements is ineligible for the suspension of the applicability of the standard regulatory requirements.

Does this notice apply to an F–1 student who departs the United States after publication of this notice in the Federal Register and who needs to obtain a new F–1 visa before returning to the United States to continue an educational program?

Yes. This notice applies to such a student, but only if the DSO has properly notated the student's SEVIS record, which will then appear on the student's Form I–20. Subject to the specific terms of this notice, the normal rules for visa issuance (including those related to public charge and

[1] Undergradudate students enrolled in a term of different duration must register for at least one half of the credit hours normally required under a "full course of study."

nonimmigrant intent) remain applicable to a nonimmigrant that needs to apply for a new F–1 visa to continue an educational program in the United States.

Does this notice apply to elementary school, middle school, and high school students in F–1 status?

Yes. However, this notice does not reduce the required course load for elementary school, middle school, or high school F–1 students. Such Nepali students must maintain the minimum number of hours of class attendance per week prescribed by the school for normal progress toward graduation. *See* 8 CFR 214.2(f)(6)(i)(E). The suspension of certain regulatory requirements related to employment through this notice is applicable to all eligible F–1 students–regardless of educational level–as required by the regulations at 8 CFR 214.2(f)(9)(i) and (f)(9)(ii). Eligible F–1 students from Nepal enrolled in an elementary school, middle school, or high school do benefit from the suspension of the requirement in 8 CFR 214.2(f)(9)(i) that limits on-campus employment to 20 hours per week while school is in session. Nothing in this notice affects the applicability of federal and state labor laws limiting the employment of minors.

Does this notice apply to a student in an English as a Second Language (ESL) program in F–1 status?

Yes. However special conditions apply to credit hour programs and clock hour programs, given the varied nature and structure of ESL programs.

(1) *Credit Hour Programs.* For an ESL program with a course load measured in credit hours, an eligible F–1 student may take a reduced course load. This amount must always be, at minimum, six credit hours of instruction per academic semester at the undergraduate level not less than three credit hours of instruction per academic semester at the graduate level. *See* 8 CFR 214.2(f)(6)(iii). Additionally, an eligible F–1 student must continue to make progress toward completing the course of study. *See* 8 CFR 214.2(f)(5)(v).

(2) *Clock Hour Programs.* An eligible F–1 student may take a reduced course load for an ESL program with a course load measured in clock hours. This amount always must be at least half of what constitutes a normal ''full course of study'' for the student. *See* 8 CFR 214.2(f)(6)(iii). For programs where the dominant part of the course of study consists of classroom instruction, the reduced course load must consist of a minimum of nine hours of instruction per week. For programs where the dominant part of the course of study consists of laboratory instruction, the reduced course load must consist of a minimum of eleven hours of instruction per week. *See* 8 CFR 214.2(f)(6)(iii) The student also must continue to make progress toward completing the course of study. *See* 8 CFR 214.2(f)(5)(v).

In general, an eligible student who takes a reduced course load must accomplish the reduced course load by taking at least half of what would constitute a normal ''full course of study'' for the student. For example, an eligible student taking two or more classes per semester for 20 hours a week may take a reduced course load, but only if the student continues to attend class and the resultant total clock hour amount is at least half of what would constitute a normal ''full course of study'' for the student. In this case, if a normal full course load for the student is 20 hours a week, an eligible student may reduce his or her course load to no less than 10 hours a week.

If this program offers two courses per semester, one for 15 hours and one for five hours, the student may only drop the five-hour class. The student may not seek to artificially remove hours from the 15-hour course to get as close as possible to the 10-hour lower limit. An eligible student may reduce courses in their entirety but may not seek to reduce hours from a course.

In all instances, an eligible student receives full-time employment authorization.

On-Campus Employment Authorization

Will an F-1 student who receives on-campus employment authorization under this notice have authorization to work more than 20 hours per week while school is in session?

Yes. For an F–1 student covered in this notice, the Secretary is suspending the applicability of the requirement in 8 CFR 214.2(f)(9)(i) that limits an F–1 student's on-campus employment to 20 hours per week while school is in session. An eligible student has authorization to work more than 20 hours per week while school is in session, if the DSO has entered the following statement in the remarks field of the SEVIS student record, which will appear on the student's Form I–20:

> Approved for more than 20 hours per week of on-campus employment and reduced course load, under the Special Student Relief authorization from [DSO must insert the beginning date of employment] until [DSO must insert the student's program end date or December 24, 2016, whichever date comes first].

To obtain on-campus employment authorization, the student must demonstrate to the DSO that the employment is necessary to avoid severe economic hardship directly resulting from the damage caused by the earthquake in Nepal on April 25, 2015. A student authorized by the DSO to engage in on-campus employment by means of this notice does not need to make any filing with U.S. Citizenship and Immigration Services (USCIS). The standard rules permitting full-time work on-campus when school is not in session or during school vacations apply. *See* 8 CFR 214.2(f)(9)(i).

Will an F-1 student who receives on-campus employment authorization under this notice have authorization to reduce the normal course load and still maintain his or her F− 1 student status?

Yes. DHS will deem an F–1 student who receives on-campus employment authorization under this notice to be engaged in a ''full course of study'' for the purpose of maintaining their F–1 status for the duration of the on-campus employment, if the student satisfies the minimum course load requirement described in this notice. *See* 8 CFR 214.2(f)(6)(i)(F). However, the authorization to reduce the normal course load is solely for DHS purposes of determining valid F–1 status. Nothing in this notice mandates that school officials allow a student to take a reduced course load if the reduction would not meet the school's minimum course load requirement for continued enrollment.[2]

Off-Campus Employment Authorization

What regulatory requirements does this notice temporarily suspend relating to off-campus employment?

For an F–1 student covered by this notice, as provided under 8 CFR 214.2(f)(9)(ii)(A), the Secretary is suspending the following regulatory requirements relating to off-campus employment:

(a) The requirement that a student must have been in F–1 status for one full academic year to be eligible for off-campus employment;

(b) The requirement that an F–1 student must demonstrate that acceptance of employment will not interfere with the student's carrying a ''full course of study''; and

(c) The requirement that limits a student's work authorization to no more

[2] Minimum course load requirement for enrollment in a school must be established in a publicly available document (*e.g.,* catalog, Web site, or operating procedure), and it must be a standard applicable to all students (U.S. citizens and foreign students) enrolled at the school.

than 20 hours per week of off-campus employment while school is in session.

Will an F-1 student who receives off-campus employment authorization under this notice have authorization to reduce the normal course load and still maintain F-1 nonimmigrant status?

Yes. DHS will deem an F–1 student who receives off-campus employment authorization by means of this notice to be engaged in a ''full course of study'' for the purpose of maintaining F–1 status for the duration of employment authorization if the student satisfies the minimum course load requirement described in this notice. *See* 8 CFR 214.2(f)(6)(i)(F). However, the authorization to reduce the normal course load is solely for DHS purposes of determining valid F–1 status. Nothing in this notice mandates that school officials allow a student to take a reduced course load if such a reduced course load would not meet the school's minimum course load requirement.

How may an eligible F-1 student obtain employment authorization for off-campus employment with a reduced course load under this notice?

An F–1 student must file a Form I–765, Application for Employment Authorization, with USCIS to apply for off-campus employment authorization based on severe economic hardship resulting from the April 25, 2015 earthquake in Nepal. Filing instructions are at *http://www.uscis.gov/i-765.*

Fee considerations. Submission of a Form I–765 currently requires payment of a $380 fee. An applicant who is unable to pay the fee may submit a completed Form I–912, Request for Fee Waiver, along with the Form I–765. *See www.uscis.gov/feewaiver.* The submission must include an explanation of why USCIS should grant the fee waiver and the reasons for the student's inability to pay. *See* 8 CFR 103.7(c).

Supporting documentation. An F–1 student seeking off-campus employment authorization due to severe economic hardship must demonstrate the following to the student's DSO:

(1) This employment is necessary to avoid severe economic hardship; and

(2) The hardship is resulting from the April 25, 2015 earthquake in Nepal.

If the DSO agrees that the student should receive such employment authorization, the DSO must recommend application approval to USCIS by entering the following statement in the remarks field of the student's SEVIS record, which will then appear on the student's Form I–20:

Recommended for off-campus employment authorization in excess of 20 hours per week and reduced course load under the Special Student Relief authorization from the date of the USCIS authorization noted on Form I–766 until [DSO must insert the student's program end date or December 24, 2016, whichever date comes first].

The student must then file the properly endorsed Form I–20 and Form I–765 according to the instructions for the Form I–765. The student may begin working off campus only upon receipt of the EAD from USCIS.

DSO recommendation. In making a recommendation that a student be approved for Special Student Relief, the DSO certifies the following:

(a) The student is in good academic standing as determined by the DSO;

(b) The student is a citizen of Nepal and is experiencing severe economic hardship as a direct result of the damage caused by the earthquake on April 25, 2015, as documented on the Form I–20;

(c) The student is carrying a ''full course of study'' at the time of the request for employment authorization;

(d) The student has confirmed that he or she will comply with the reduced course load requirements of 8 CFR 214.2(f)(6)(iii) and register for the duration of the authorized employment for a minimum of six credit hours of instruction per academic semester if the student is at the undergraduate level or for a minimum of three credit hours of instruction per academic semester if the student is at the graduate level; and

(e) The off-campus employment is necessary to alleviate severe economic hardship to the individual caused by the April 25, 2015 earthquake in Nepal.

Processing. To facilitate prompt adjudication of the student's application for off-campus employment authorization under 8 CFR 214.2(f)(9)(ii)(C), the student should do both of the following:

(a) Ensure that the application package includes all of the following documents:

(1) A completed Form I–765;

(2) The required fee or properly documented fee waiver request as defined in 8 CFR 103.7(c); and

(3) A signed and dated copy of the student's Form I–20 with the appropriate DSO recommendation, as previously described in this notice; and

(b) Send the application in an envelope which is clearly marked on the front of the envelope, bottom right-hand side, with the phrase ''SPECIAL STUDENT RELIEF.'' Failure to include this notation may result in significant processing delays.

If USCIS approves the student's Form I–765, a USCIS official will send the student an EAD as evidence of the student's employment authorization. The EAD will contain an expiration date that does not exceed the end of the granted temporary relief.

Temporary Protected Status (TPS) Considerations

Can an F-1 student apply for TPS and for benefits under this notice at the same time?

Yes. An F–1 student who has not yet applied for TPS or for student relief under this notice has two options. Under the first option, the student may file the TPS application according to the instructions in the **Federal Register** notice designating Nepal for TPS. *See* 80 FR 36346, June 24, 2015. All TPS applicants must file a Form I–821, Application for Temporary Protected Status, and Form I–765, regardless of whether they are seeking employment authorization under TPS. The fee (or a properly documented fee waiver request) for the Form I–765 is necessary only if the applicant is seeking employment authorization under TPS. *See* 8 CFR 244.6. After receiving the TPS-related EAD, a student who files a TPS application and requests employment authorization under TPS may ask the DSO to take the following steps:

(1) Make the required entry in SEVIS;

(2) Issue an updated Form I–20 as described in this notice; and

(3) Note that the student has authorization to carry a reduced course load and is working pursuant to a TPS-related EAD.

A student concurrently maintains F–1 status and TPS if he or she maintains the minimum course load described in this notice, does not otherwise violate his or her F–1 status as provided under 8 CFR 214.1(g), and maintains his or her TPS.

Under the second option, the student may apply for an EAD under student relief. In this instance, the student must file the Form I–765 with the location specified in the filing instructions. At the same time, the student may file a separate TPS application but must submit the TPS filing according to the instructions provided in the **Federal Register** notice designating Nepal for TPS. Because the student already has applied for employment authorization under student relief, the Form I–765 submitted as part of the TPS application is without fee. The student should not check any of the boxes requesting a TPS-related EAD when filling-out Form I–821. Again, the student will be able to maintain F–1 status and TPS.

When a student applies simultaneously for TPS status and benefits under this notice, what is the minimum course load requirement while an application for employment authorization is pending?

The student must maintain normal course load requirements for a ''full course of study'' unless or until the student receives employment authorization under this notice. TPS-related employment authorization, by itself, does not authorize a student to drop below 12 credit hours. Once approved for ''severe economic hardship'' employment authorization, the student may drop below 12 credit hours (with a minimum of six credit hours of instruction per academic semester if the student is at the undergraduate level, or for a minimum of three credit hours of instruction per academic semester if the student is at the graduate level). *See* 8 CFR 214.2(f)(6), 214.2(f)(5)(v), 214.2(f)(9)(i) and (ii).

How does a student who has received approval for employment authorization under TPS then apply for authorization to take a reduced course load under this notice?

There is no further application process. The student only needs to demonstrate to the DSO the economic hardship caused by the damage caused by the April 25, 2015 earthquake in Nepal and receive the DSO recommendation in SEVIS. The DSO's recommendation in SEVIS will enable the student with TPS to reduce his or her course load without violating his or her F status. USCIS will not issue any other EAD.

Can a student who has been granted TPS apply for reinstatement to F-1 student status after his or her F-1 status has lapsed?

A student whose F–1 status lapses after he or she is granted TPS may apply for reinstatement to F–1 student status if the student meets the requirements of 8 CFR 214.2(f)(16). For example, to qualify for reinstatement, the student will be required to establish that his or her violation of F–1 status resulted from circumstances beyond the student's control such as serious injury or illness or, rather than a pattern of repeated violations.

How long will this notice remain in effect?

This notice grants temporary relief until December 24, 2016, to eligible F–1 students. DHS will continue to monitor the situation in Nepal. Should the special provisions authorized by this notice need modification or extension, DHS will announce such changes in the **Federal Register**.

Paperwork Reduction Act (PRA)

An F–1 student seeking off-campus employment authorization due to severe economic hardship must demonstrate to the student's DSO that this employment is necessary to avoid severe economic hardship. A DSO who agrees that the student should receive such employment authorization must recommend application approval to USCIS by entering information in the remarks field of the student's SEVIS record. The authority to collect this information is in the SEVIS collection of information currently approved by the Office of Management and Budget (OMB) under OMB Control Number 1653–0038.

This notice also allows an eligible F–1 student to request employment authorization, work an increased number of hours while school is in session, and reduce his or her course load while continuing to maintain F–1 student status.

To apply for work authorization, an F–1 student must complete and submit a currently approved Form I–765 according to the instructions on the form. OMB has previously approved the collection of information contained on the current Form I–765, consistent with the Paperwork Reduction Act (PRA). (OMB Control No. 1615–0040). Although there will be a slight increase in the number of Form I–765 filings because of this notice, the number of filings currently contained in the OMB annual inventory for Form I–765 is sufficient to cover the additional filings. Accordingly, there is no further action required under the PRA.

Jeh Charles Johnson,

Secretary of Homeland Security.

[FR Doc. 2015–28360 Filed 11–6–15; 8:45 am]

BILLING CODE 9111–28–P

DEPARTMENT OF HOMELAND SECURITY

[Docket No. DHS–2015–0074]

Agency Information Collection Activities: CISOMB Customer Satisfaction and Needs Assessment Survey (Ombudsman Form DHS—NEW)

AGENCY: Office of the Citizenship and Immigration Services Ombudsman (CISOMB), DHS.

ACTION: 60-Day notice and request for comments; New Collection, 1601—NEW.

SUMMARY: The Department of Homeland Security, Office of the Citizenship and Immigration Services Ombudsman, will submit the following Information Collection Request (ICR) to the Office of Management and Budget (OMB) for review and clearance in accordance with the Paperwork Reduction Act of 1995 (Pub. L. 104–13, 44 U.S.C. Chapter 35).

DATES: Comments are encouraged and will be accepted until January 8, 2016. This process is conducted in accordance with 5 CFR 1320.1.

ADDRESSES: You may submit comments, identified by docket number DHS–2015–0074 by one of the following methods:

- *Federal eRulemaking Portal: http://www.regulations.gov.* Please follow the instructions for submitting comments.
- *Email: dhs.pra@hq.dhs.gov.* Please include docket number DHS–2015–0074 in the subject line of the message.

SUPPLEMENTARY INFORMATION: The Citizenship and Immigration Services (CIS) Ombudsman was created under section 452 of the Homeland Security Act of 2002 (Pub. L. 107–296) to: (1) Assist individuals and employers in resolving problems with the U.S. Citizenship and Immigration Services (USCIS); (2) identify areas in which individuals and employers have problems in dealing with USCIS; and (3) propose changes, to the extent possible, in the administrative practices of USCIS to mitigate problems.

The information collected on this form will allow the CIS Ombudsman to obtain feedback from the general public to assess the needs of customers and to identify improvement opportunities for Ombudsman services. The data collection instrument does not solicit or collect Personally Identifiable Information (PII).

The use of this survey provides the most efficient means for collecting and processing the required data. In the future, the Ombudsman will employ the use of information technology in collecting and processing this information by offering the option to complete the survey online. Per PRA requirements, a fillable PDF version of the survey will continue to be provided on the Ombudsman's Web site. The survey can be completed in PDF format, and faxed or sent as an attachment by email or in paper format by regular mail to the Ombudsman's office at the address indicated on the survey. After approval of the survey detailed in this supporting statement, the online survey will be posted on the Ombudsman's Web site at *http://www.dhs.gov/topic/cis-ombudsman.*

The assurance of confidentiality provided to the respondents for this information collection is provided by: (a) The Ombudsman statute and mandate as established by Homeland Security Act Section 452;(b)Privacy Act of 1974; and (c) The DHS Privacy Office has reviewed the entire package of documents for this information collection. This collection is covered by a Privacy Threshold Assessment adjudicated by the DHS Privacy office on March 26, 2015. The Ombudsman Customer Satisfaction and Needs Assessment Survey will be in compliance with all applicable DHS Privacy Office, DHS CIO, DHS Records Management, and OMB regulations regarding data collection, use, storage, and retrieval. The proposed public use data collection system is therefore intended to be distributed for public use primarily by electronic means with limited paper distribution and processing of paper forms.

The Ombudsman Customer Satisfaction and Needs Assessment Survey has been constructed in compliance with regulations and authorities under the purview of the DHS Privacy Office, DHS CIO, DHS Records Management, and OMB regulations regarding data collection, use, sharing, storage, information security and retrieval of information. In accordance with the Privacy Act of 1974, the Department of Homeland Security is giving notice that it proposes to establish the Department of Homeland Security system of records notice titled, ''The Ombudsman Customer Satisfaction and Needs Assessment Survey System of Records.'' This system of records will continue to ensure the efficient and secure processing of information to aid the Citizenship and Immigration Services Ombudsman in assessing the needs of customers to improve Ombudsman services and offer more efficient and effective alternatives. This system will be included in the Department of Homeland Security's inventory of record systems. This is a new collection.

The Office of Management and Budget is particularly interested in comments which:

1. Evaluate whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information will have practical utility;

2. Evaluate the accuracy of the agency's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used;

3. Enhance the quality, utility, and clarity of the information to be collected; and

4. Minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, *e.g.,* permitting electronic submissions of responses.

Analysis

Agency: Office of the Citizenship and Immigration Services Ombudsman, DHS.

Title: Agency Information Collection Activities: CISOMB Customer Satisfaction and Needs Assessment Survey.

OMB Number: 1601—NEW.

Frequency: On occasion.

Affected Public: Individuals and Households.

Number of Respondents: 8,800.

Estimated Time per Respondent: .5 hours.

Total Burden Hours: 4,400 hours.

Dated: November 2, 2015.

Carlene C. Ileto,

Executive Director, Enterprise Business Management Office.

[FR Doc. 2015–28382 Filed 11–6–15; 8:45 am]

BILLING CODE 9110–9B–P

DEPARTMENT OF HOMELAND SECURITY

U.S. Citizenship and Immigration Services

[OMB Control Number 1615–0078]

Agency Information Collection Activities: Application To File Declaration of Intention, Form N–300; Revision of a Currently Approved Collection

AGENCY: U.S. Citizenship and Immigration Services, Department of Homeland Security.

ACTION: 30-day notice.

SUMMARY: The Department of Homeland Security (DHS), U.S. Citizenship and Immigration Services (USCIS) will be submitting the following information collection request to the Office of Management and Budget (OMB) for review and clearance in accordance with the Paperwork Reduction Act of 1995. The information collection notice was previously published in the **Federal Register** on August 4, 2015, at 80 FR 46314, allowing for a 60-day public comment period. USCIS did receive one comment in connection with the 60-day notice.

DATES: The purpose of this notice is to allow an additional 30 days for public comments. Comments are encouraged and will be accepted until December 9, 2015. This process is conducted in accordance with 5 CFR 1320.10.

ADDRESSES: Written comments and/or suggestions regarding the item(s) contained in this notice, especially regarding the estimated public burden and associated response time, must be directed to the OMB USCIS Desk Officer via email at *oira_submission@omb.eop.gov.* Comments may also be submitted via fax at (202) 395–5806 (This is not a toll-free number). All submissions received must include the agency name and the OMB Control Number [1615–0078].

You may wish to consider limiting the amount of personal information that you provide in any voluntary submission you make. For additional information please read the Privacy Act notice that is available via the link in the footer of *http://www.regulations.gov.*

FOR FURTHER INFORMATION CONTACT: USCIS, Office of Policy and Strategy, Regulatory Coordination Division, Laura Dawkins, Chief, 20 Massachusetts Avenue NW., Washington, DC 20529–2140, Telephone number (202) 272–8377 (This is not a toll-free number. Comments are not accepted via telephone message). Please note contact information provided here is solely for questions regarding this notice. It is not for individual case status inquiries. Applicants seeking information about the status of their individual cases can check Case Status Online, available at the USCIS Web site at *http://www.uscis.gov,* or call the USCIS National Customer Service Center at (800) 375–5283; TTY (800) 767–1833.

SUPPLEMENTARY INFORMATION:

Comments

You may access the information collection instrument with instructions, or additional information by visiting the Federal eRulemaking Portal site at: *http://www.regulations.gov* and enter USCIS–2008–0007 in the search box. Written comments and suggestions from the public and affected agencies should address one or more of the following four points:

(1) Evaluate whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information will have practical utility;

(2) Evaluate the accuracy of the agency's estimate of the burden of the

proposed collection of information, including the validity of the methodology and assumptions used;

(3) Enhance the quality, utility, and clarity of the information to be collected; and

(4) Minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, *e.g.,* permitting electronic submission of responses.

Overview of This Information Collection

(1) *Type of Information Collection Request:* Revision of a Currently Approved Collection.

(2) *Title of the Form/Collection:* Application to File Declaration of Intention.

(3) *Agency form number, if any, and the applicable component of the DHS sponsoring the collection:* Form N–300; USCIS.

(4) *Affected public who will be asked or required to respond, as well as a brief abstract: Primary:* Individuals or households. Form N–300 will be used by permanent residents to file a declaration of intention to become a citizen of the United States. This collection is also used to satisfy documentary requirements for those seeking to work in certain occupations or professions, or to obtain various licenses.

(5) *An estimate of the total number of respondents and the amount of time estimated for an average respondent to respond:* The estimated total number of respondents for the information collection N–300 is 45 and the estimated hour burden per response is 1.33 hours (80 minutes).

(6) *An estimate of the total public burden (in hours) associated with the collection:* The total estimated annual hour burden associated with this collection is 60 hours.

(7) *An estimate of the total public burden (in cost) associated with the collection:* The estimated total annual cost burden associated with this collection of information is $1,271.25.

Dated: November 4, 2015.

Laura Dawkins,

Chief, Regulatory Coordination Division, Office of Policy and Strategy, U.S. Citizenship and Immigration Services, Department of Homeland Security.

[FR Doc. 2015–28465 Filed 11–6–15; 8:45 am]

BILLING CODE 9111–97–P

DEPARTMENT OF HOMELAND SECURITY

U.S. Citizenship and Immigration Services

[OMB Control Number 1615–0082]

Agency Information Collection Activities: Application To Replace Permanent Resident Card, Form I–90; Revision of a Currently Approved Collection

AGENCY: U.S. Citizenship and Immigration Services, Department of Homeland Security.

ACTION: 60-Day Notice.

SUMMARY: The Department of Homeland Security (DHS), U.S. Citizenship and Immigration (USCIS) invites the general public and other Federal agencies to comment upon this proposed revision of a currently approved collection of information. In accordance with the Paperwork Reduction Act (PRA) of 1995, the information collection notice is published in the **Federal Register** to obtain comments regarding the nature of the information collection, the categories of respondents, the estimated burden (*i.e.* the time, effort, and resources used by the respondents to respond), the estimated cost to the respondent, and the actual information collection instruments.

DATES: Comments are encouraged and will be accepted for 60 days until January 8, 2016.

ADDRESSES: All submissions received must include the OMB Control Number 1615–0082 in the subject box, the agency name and Docket ID USCIS–2009–0002. To avoid duplicate submissions, please use only *one* of the following methods to submit comments:

(1) *Online.* Submit comments via the Federal eRulemaking Portal Web site at *http://www.regulations.gov* under e-Docket ID number USCIS–2009–0002;

(2) *Email.* Submit comments to *USCISFRComment@uscis.dhs.gov;*

(3) *Mail.* Submit written comments to DHS, USCIS, Office of Policy and Strategy, Chief, Regulatory Coordination Division, 20 Massachusetts Avenue NW., Washington, DC 20529–2140.

FOR FURTHER INFORMATION CONTACT: USCIS, Office of Policy and Strategy, Regulatory Coordination Division, Laura Dawkins, Chief, 20 Massachusetts Avenue NW., Washington, DC 20529–2140, telephone number 202–272–8377 (This is not a toll-free number. Comments are not accepted via telephone message). Please note contact information provided here is solely for questions regarding this notice. It is not for individual case status inquiries. Applicants seeking information about the status of their individual cases can check Case Status Online, available at the USCIS Web site at *http://www.uscis.gov,* or call the USCIS National Customer Service Center at 800–375–5283 (TTY 800–767–1833).

SUPPLEMENTARY INFORMATION:

Comments

You may access the information collection instrument with instructions, or additional information by visiting the Federal eRulemaking Portal site at: *http://www.regulations.gov* and enter USCIS–2009–0002 in the search box. Regardless of the method used for submitting comments or material, all submissions will be posted, without change, to the Federal eRulemaking Portal at *http://www.regulations.gov,* and will include any personal information you provide. Therefore, submitting this information makes it public. You may wish to consider limiting the amount of personal information that you provide in any voluntary submission you make to DHS. DHS may withhold information provided in comments from public viewing that it determines may impact the privacy of an individual or is offensive. For additional information, please read the Privacy Act notice that is available via the link in the footer of *http://www.regulations.gov.*

Written comments and suggestions from the public and affected agencies should address one or more of the following four points:

(1) Evaluate whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information will have practical utility;

(2) Evaluate the accuracy of the agency's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used;

(3) Enhance the quality, utility, and clarity of the information to be collected; and

(4) Minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, *e.g.,* permitting electronic submission of responses.

Overview of This Information Collection

(1) *Type of Information Collection:* Revision of a Currently Approved Collection.

(2) *Title of the Form/Collection:* Application to Replace Permanent Resident Card.

(3) *Agency form number, if any, and the applicable component of the DHS sponsoring the collection:* USCIS Form I–90; USCIS; USCIS.

(4) *Affected public who will be asked or required to respond, as well as a brief abstract: Primary:* Individuals or households. Form I–90 is used by USCIS to determine eligibility to replace a Lawful Permanent Resident Card.

(5) *An estimate of the total number of respondents and the amount of time estimated for an average respondent to respond:* 485,298 respondents responding via the paper Form I–90 at an estimated1 hour and 45 minutes (1.75 hours) per response; 326,532 respondents responding via the Electronic Immigration System (ELIS) requiring an estimated 1 hour and 25 minutes (1.42 hours) per response. This estimated time was previously reported as .50 hours per response; 808,830 respondents requiring Biometric Processing at an estimated 1 hour and 10 minutes (1.17 hours) per response.

(6) *An estimate of the total public burden (in hours) associated with the collection:* The total estimated annual hour burden associated with this collection is 2,259,277 hours.

(7) *An estimate of the total public burden (in cost) associated with the collection:* The estimated total annual cost burden associated with this collection of information is $206,656,065.

Dated: November 3, 2015.

Laura Dawkins,

Chief, Regulatory Coordination Division, Office of Policy and Strategy, U.S. Citizenship and Immigration Services, Department of Homeland Security.

[FR Doc. 2015–28376 Filed 11–6–15; 8:45 am]

BILLING CODE 9111–97–P

DEPARTMENT OF HOMELAND SECURITY

U.S. Citizenship and Immigration Services

[OMB Control Number 1615–0100]

Agency Information Collection Activities: Request for the Return of Original Documents, Form G–884; Revision of an Existing Information Collection; Comment Request

AGENCY: U.S. Citizenship and Immigration Services, Department of Homeland Security.

ACTION: 60-Day Notice.

SUMMARY: The Department of Homeland Security (DHS), U.S. Citizenship and Immigration (USCIS) invites the general public and other Federal agencies to comment upon this proposed revision of a currently approved collection of information or new collection of information. In accordance with the Paperwork Reduction Act (PRA) of 1995, the information collection notice is published in the **Federal Register** to obtain comments regarding the nature of the information collection, the categories of respondents, the estimated burden (*i.e.* the time, effort, and resources used by the respondents to respond), the estimated cost to the respondent, and the actual information collection instruments.

DATES: Comments are encouraged and will be accepted for 60 days until January 8, 2016.

ADDRESSES: All submissions received must include the OMB Control Number 1615–0100 in the subject box, the agency name and Docket ID USCIS–2008–0010. To avoid duplicate submissions, please use only *one* of the following methods to submit comments: (1) *Online.* Submit comments via the Federal eRulemaking Portal Web site at *http://www.regulations.gov* under e-Docket ID number USCIS–2008–0010; (2) *Email.* Submit comments to *USCISFRComment@uscis.dhs.gov;* (3) *Mail.* Submit written comments to DHS, USCIS, Office of Policy and Strategy, Chief, Regulatory Coordination Division, 20 Massachusetts Avenue NW., Washington, DC 20529–2140.

FOR FURTHER INFORMATION CONTACT: USCIS, Office of Policy and Strategy, Regulatory Coordination Division, Laura Dawkins, Chief, 20 Massachusetts Avenue NW., Washington, DC 20529–2140, telephone number 202–272–8377 (This is not a toll-free number. Comments are not accepted via telephone message). Please note contact information provided here is solely for questions regarding this notice. It is not for individual case status inquiries. Applicants seeking information about the status of their individual cases can check Case Status Online, available at the USCIS Web site at *http://www.uscis.gov,* or call the USCIS National Customer Service Center at 800–375–5283 (TTY 800–767–1833).

SUPPLEMENTARY INFORMATION:

Comments

You may access the information collection instrument with instructions, or additional information by visiting the Federal eRulemaking Portal site at: *http://www.regulations.gov* and enter USCIS–2008–0010 in the search box. Regardless of the method used for submitting comments or material, all submissions will be posted, without change, to the Federal eRulemaking Portal at *http://www.regulations.gov,* and will include any personal information you provide. Therefore, submitting this information makes it public. You may wish to consider limiting the amount of personal information that you provide in any voluntary submission you make to DHS. DHS may withhold information provided in comments from public viewing that it determines may impact the privacy of an individual or is offensive. For additional information, please read the Privacy Act notice that is available via the link in the footer of *http://www.regulations.gov.*

Written comments and suggestions from the public and affected agencies should address one or more of the following four points:

(1) Evaluate whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information will have practical utility;

(2) Evaluate the accuracy of the agency's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used;

(3) Enhance the quality, utility, and clarity of the information to be collected; and

(4) Minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, *e.g.,* permitting electronic submission of responses.

Overview of This Information Collection

(1) *Type of Information Collection:* Revision of a Currently Approved Collection.

(2) *Title of the Form/Collection:* Request for the Return of Original Documents.

(3) *Agency form number, if any, and the applicable component of the DHS sponsoring the collection:* G–884; USCIS.

(4) *Affected public who will be asked or required to respond, as well as a brief abstract: Primary:* Individuals or households. The information will be used by USCIS to determine whether a person is eligible to obtain original documents contained in an alien file.

(5) *An estimate of the total number of respondents and the amount of time estimated for an average respondent to respond:* The estimated total number of respondents for the information collection G–884 is 2,700 and the estimated hour burden per response is 0.5 hours (30 minutes).

(6) *An estimate of the total public burden (in hours) associated with the collection:* The total estimated annual hour burden associated with this collection is 1,350 hours.

(7) *An estimate of the total public burden (in cost) associated with the collection:* The estimated total annual cost burden associated with this collection of information is $29,700.

Dated: November 3, 2015.

Laura Dawkins,

Chief, Regulatory Coordination Division, Office of Policy and Strategy, U.S. Citizenship and Immigration Services, Department of Homeland Security.

[FR Doc. 2015–28378 Filed 11–6–15; 8:45 am]

BILLING CODE 9111–97–P

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

[Docket No. FR–5899–N–01]

Fair Housing Initiatives Program—Fiscal Year 2016—Solicitation of Comment

AGENCY: Office of the Assistant Secretary for Fair Housing and Equal Opportunity, HUD.

ACTION: Notice.

SUMMARY: This notice invites interested parties to comment on HUD's Fair Housing Initiative Program (FHIP) Fiscal Year (FY) 2015 administration of the funding competition, including FHIP's FY 2015 Notice of Funding Availability (NOFA), which closed on August 26, 2015. A copy of the FY 2015 NOFA can be found at *http://portal.hud.gov/hudportal/documents/huddoc?id=2015fhipnofa.pdf.*

Comments are being requested as part of an on-going effort to evaluate and improve administration of the Fiscal Year (FY) 2016 funding competition.

DATES: *Comment Due Date:* December 9, 2015.

ADDRESSES: Interested persons are invited to submit comments regarding the administration of the FY 2016 FHIP competition to the Regulations Division, Office of General Counsel, Department of Housing and Urban Development, 451 7th Street SW., Room 10276, Washington, DC 20410–0500. Communications must refer to the above docket number and title. There are two methods for submitting public comments. All submissions must refer to the above docket number and title.

1. *Submission of Comments by Mail.* Comments may be submitted by mail to the Regulations Division, Office of General Counsel, Department of Housing and Urban Development, 451 7th Street SW., Room 10276, Washington, DC 20410–0500.

2. *Electronic Submission of Comments.* Interested persons may submit comments electronically through the Federal eRulemaking Portal at *www.regulations.gov.* HUD strongly encourages commenters to submit comments electronically. Electronic submission of comments allows the commenter maximum time to prepare and submit a comment, ensures timely receipt by HUD, and enables HUD to make them immediately available to the public. Comments submitted electronically through the *www.regulations.gov* Web site can be viewed by other commenters and interested members of the public. Commenters should follow the instructions provided on that site to submit comments electronically.

Note: To receive consideration as public comments, comments must be submitted through one of the two methods specified above. Again, all submissions must refer to the docket number and title of the rule.

No Facsimile Comments. Facsimile (FAX) comments are not acceptable.

Public Inspection of Public Comments. All properly submitted comments and communications submitted to HUD will be available for public inspection and copying between 8 a.m. and 5 p.m. weekdays at the above address. Due to security measures at the HUD Headquarters building, an appointment to review the public comments must be scheduled in advance by calling the Regulations Division at 202–708–3055 (this is not a toll-free number). Individuals with speech or hearing impairments may access this number via TTY by calling the Federal Relay Service at 800–877–8339. Copies of all comments submitted are available for inspection and downloading at *www.regulations.gov.*

FOR FURTHER INFORMATION CONTACT: Myron Newry or Paula Stone of the Office of Fair Housing and Equal Opportunity's FHIP Division at 202–402–7095 and 202–402–7054, respectively (these are not toll-free numbers).

Persons with hearing or speech impairments may access these numbers via TTY by calling the Federal Relay Service at 800–877–8339 (this is a toll free number).

SUPPLEMENTARY INFORMATION: In anticipation of the next round of funding and grant administration under the Fair Housing Initiatives Program (FHIP), HUD invites comments from potential applicants, prior grantees and applicants, and any other interested parties on HUD's 2016 FHIP competition. HUD's FY 2015 FHIP NOFA can be found at *http://portal.hud.gov/hudportal/documents/huddoc?id=2015fhipnofa.pdf.*

HUD will consider the comments received in response to this notice when formulating plans for the administration of FHIP grants and disposition of funds appropriated for Fiscal Year 2016.

Dated: November 2, 2015.

Gustavo Velasquez,

Assistant Secretary for Fair Housing and Equal Opportunity.

[FR Doc. 2015–28457 Filed 11–6–15; 8:45 am]

BILLING CODE 4210–67–P

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

[Docket No. FR–5835–N–21]

60-Day Notice of Proposed Information Collection: Disaster Management

AGENCY: Office of the Assistant Secretary for Housing—Federal Housing Commissioner, HUD.

ACTION: Notice.

SUMMARY: HUD is seeking approval from the Office of Management and Budget (OMB) for the information collection described below. In accordance with the Paperwork Reduction Act, HUD is requesting comment from all interested parties on the proposed collection of information. The purpose of this notice is to allow for 60 days of public comment.

DATES: *Comments Due Date: January 8, 2016.*

ADDRESSES: Interested persons are invited to submit comments regarding this proposal. Comments should refer to the proposal by name and/or OMB Control Number and should be sent to: Colette Pollard, Reports Management Officer, QDAM, Department of Housing and Urban Development, 451 7th Street SW., Room 4176, Washington, DC 20410–5000; telephone 202–402–3400 (this is not a toll-free number) or email at *Colette.Pollard@hud.gov* for a copy of the proposed forms or other available information. Persons with hearing or speech impairments may access this number through TTY by calling the toll-free Federal Relay Service at (800) 877–8339.

FOR FURTHER INFORMATION CONTACT: [Kenneth F. Hannon, Program Analyst Office of Asset Management and Portfolio Oversight]: Department of Housing and Urban Development, 451 7th Street SW., Washington, DC 20410; email *Kenneth.f.hannon@hud.gov* or telephone 202–402–2599. This is not a toll-free number. Persons with hearing or speech impairments may access this number through TTY by calling the toll-free Federal Relay Service at (800) 877–8339.

Copies of available documents submitted to OMB may be obtained from Ms. Pollard.

SUPPLEMENTARY INFORMATION: This notice informs the public that HUD is seeking approval from OMB for the information collection described in Section A.

A. Overview of Information Collection

Title of Information Collection: Disaster Management.

OMB Approval Number: 2502–0582.

Type of Request: Extension of currently approved collection.

Form Number: None.

Description of the need for the information and proposed use: To provide an orderly and continuing means of assistance by the Federal Government to State and local governments in carrying out their responsibilities to alleviate the suffering and damage resulting from such disasters.

Respondents: HUD staff and multifamily housing project owners who are subject to HUD regulations.

Estimated Number of Respondents: 11,736.

Estimated Number of Responses: 8.

Frequency of Response: Upon Presidentially declared disasters involving individual assistance.

Average Hours per Response: 1.75 hours.

Total Estimated Burdens: 14.

B. Solicitation of Public Comment

This notice is soliciting comments from members of the public and affected parties concerning the collection of information described in Section A on the following:

(1) Whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information will have practical utility;

(2) The accuracy of the agency's estimate of the burden of the proposed collection of information;

(3) Ways to enhance the quality, utility, and clarity of the information to be collected; and

(4) Ways to minimize the burden of the collection of information on those who are to respond; including through the use of appropriate automated collection techniques or other forms of information technology, *e.g.,* permitting electronic submission of responses.

HUD encourages interested parties to submit comment in response to these questions.

Authority: Section 3507 of the Paperwork Reduction Act of 1995, 44 U.S.C. Chapter 35.

Dated: November 2, 2015.

Janet M. Golrick,

Associate General Deputy Assistant Secretary for Housing-Associate Deputy Federal Housing Commissioner.

[FR Doc. 2015–28461 Filed 11–6–15; 8:45 am]

BILLING CODE 4210–67–P

DEPARTMENT OF THE INTERIOR

Geological Survey

[GX15LR000F60100]

Agency Information Collection Activities: Request for Comments

AGENCY: U.S. Geological Survey (USGS), Interior.

ACTION: Notice of an extension and revision of a currently approved information collection (1028–0062) Industrial Minerals Survey.

SUMMARY: We (the U.S. Geological Survey) are asking the Office of Management and Budget (OMB) to approve the information collection (IC) described below. This collection consists of 38 forms. As part of the requested extension, we will make a revision to the number of the associated collection instruments. This revision includes deleting USGS Form 9–4002–A and USGS Form 9–4019–A. As required by the Paperwork Reduction Act (PRA) of 1995, and as part of our continuing efforts to reduce paperwork and respondent burden, we invite the general public and other Federal agencies to take this opportunity to comment on this IC. This collection is scheduled to expire on November 30, 2015.

DATES: To ensure that your comments are considered, OMB must receive them on or before December 9, 2015.

ADDRESSES: Please submit your written comments on this IC directly to the Office of Management and Budget, Office of Information and Regulatory Affairs, Attention: Desk Officer for the Department of the Interior, at *OIRA_SUBMISSION@omb.eop.gov* (email); or (202) 395–5806 (fax). Please also forward a copy of your comments to the Information Collection Clearance Officer, U.S. Geological Survey, 807 National Center, 12201 Sunrise Valley Drive, Reston, VA 20192 (mail); 703–648–7195 (fax); or *gs-info_collections@usgs.gov* (email). Reference ''Information Collection 1028–0062, Industrial Minerals Surveys'' in all correspondence.

FOR FURTHER INFORMATION CONTACT: Elizabeth S. Sangine at 703–648–7720 (telephone); *escottsangine@usgs.gov* (email); or by mail at U.S. Geological Survey, 989 National Center, 12201 Sunrise Valley Drive, Reston, VA 20192. You may also find information about this Information Collection Request (ICR) at *www.reginfo.gov.*

SUPPLEMENTARY INFORMATION:

I. Abstract

Respondents to these forms supply the USGS with domestic production and consumption data of industrial mineral commodities, some of which are considered strategic and critical. These data and derived information will be published as chapters in Minerals Yearbooks, monthly and quarterly Mineral Industry Surveys, annual Mineral Commodity Summaries, and special publications, for use by Government agencies, industry, education programs, and the general public.

II. Data

OMB Control Number: 1028–0062.

Form Number: Various (38 forms).

Title: Industrial Minerals Surveys.

Type of Request: Extension and revision of a currently approved collection.

Affected Public: Business or Other-For-Profit Institutions: U.S. nonfuel minerals producers and consumers of industrial minerals. Public sector: State and local governments.

Respondent Obligation: None. Participation is voluntary.

Frequency of Collection: Monthly, Quarterly, Semiannually, or Annually.

Estimated Number of Annual Responses: 20,053.

Estimated Time per Response: For each form, we will include an average burden time ranging from 10 minutes to 5 hours.

Annual Burden Hours: 14,006 hours.

Estimated Reporting and Recordkeeping ``Non-Hour Cost'' Burden: There are no ''non-hour cost'' burdens associated with this collection of information.

Public Disclosure Statement: The PRA (44 U.S.C. 3501, *et seq.*) provides that an agency may not conduct or sponsor a collection of information unless it displays a currently valid OMB control number and current expiration date.

III. Request for Comments

On July 1, 2015, a 60-day **Federal Register** notice (80 FR 37650) was published announcing this information collection. Public comments were solicited for 60 days ending August 31, 2015. We received one public comment in response to that notice from the Department of Commerce Bureau of Economic Analysis (BEA) supporting the continued collection of these data which are an important data source for key components of BEA's economic statistics. We again invite comments as to: (a) Whether the proposed collection of information is necessary for the agency to perform its duties, including whether the information is useful; (b) the accuracy of the agency's estimate of the burden time to the proposed collection of information; (c) how to enhance the quality, usefulness, and clarity of the information to be collected; and (d) how to minimize the burden on the respondents, including the use of automated collection techniques or other forms of information technology.

Please note that the comments submitted in response to this notice are a matter of public record. Before including your personal mailing address, phone number, email address, or other personally identifiable information in your comment, you should be aware that your entire comment, including your personally identifiable information, may be made publicly available at any time. While you can ask us in your comment to withhold your personally identifiable information from public view, we cannot guarantee that it will be done.

Michael J. Magyar,

Associate Director, National Minerals Information Center, U.S. Geological Survey.

[FR Doc. 2015–28406 Filed 11–6–15; 8:45 am]

BILLING CODE 4338–11–P

DEPARTMENT OF THE INTERIOR

Bureau of Indian Affairs

[156A2100DD/AAKC001030/ A0A501010.999900 253G]

Draft Environmental Impact Statement for Management of Osage Nation Oil and Gas Resources, Osage County, Oklahoma

AGENCY: Bureau of Indian Affairs, Interior.

ACTION: Notice of availability.

SUMMARY: In accordance with the National Environmental Policy Act, the Bureau of Indian Affairs (BIA), as the lead Federal agency, with the Osage Nation and the Environmental Protection Agency (EPA) as cooperating agencies, has prepared a draft environmental impact statement (DEIS). This document is for the management of oil and gas resources owned by the United States in trust for the Osage in Osage County, Oklahoma. This notice announces that the DEIS is now available for public review and that the BIA will hold a public meeting to solicit comments on it.

DATES: A public meeting has been scheduled from 3 p.m. to 6 p.m. on November 30, 2015, at the Wah Zha Zhi Cultural Center, 1449 Main St., Pawhuska, Oklahoma. The date and location of the public meeting, including any changes, will be announced at least 15 days in advance through notices in the following local newspapers: *Fairfax Chief, Hominy News Progress, Pawhuska Journal Capital, Shidler Review, Skiatook,* and *Tulsa World* and will be posted on the following Internet Web site: *http://www.bia.gov/WhoWeAre/RegionalOffices/EasternOklahoma/WeAre/Osage/OSAGEOilGasEIS.* In order to be fully considered, written comments on the DEIS must arrive no later than 45 days after the EPA publishes its Notice of Availability in the **Federal Register**.

ADDRESSES: You may mail, email, hand deliver, or fax written comments to Ms. Jeannine Hale, BIA Eastern Oklahoma Regional Office, P.O. Box 8002, Muskogee, OK 74402–8002; fax (918) 781–4667; email: *osagecountyoilgaseis@bia.gov.* The DEIS will be available for review at 813 Grandview, Pawhuska, OK 74820. It is also available online at *http://www.bia.gov/WhoWeAre/RegionalOffices/EasternOklahoma/WeAre/Osage/OSAGEOilGasEIS.*

FOR FURTHER INFORMATION CONTACT: Ms. Jeannine Hale, Division of Environmental and Cultural Resources, BIA Eastern Oklahoma Regional Office, P.O. Box 8002, Muskogee, OK 74402–8002, (918) 781–4660.

SUPPLEMENTARY INFORMATION: The proposed action for this EIS is to update and provide additional analysis on the impacts of the BIA lease and permit approval program to facilitate the development of oil and gas in Osage County in an efficient manner that prevents pollution.

Under the Osage Allotment Act of 1906, the United States reserved all rights to the mineral estate in Osage County for the benefit of the Osage. The mineral estate is held in trust, and the BIA approves oil and gas leases, applications for permits to drill, and other site-specific permit applications in Osage County under the authority of the Osage Allotment Act, as amended and 25 Code of Federal Regulations Part 226.

The BIA, under delegation of the Secretary of the Interior, is responsible for administering the development of oil and gas resources in Osage County for the benefit of the Osage. The Federal actions, including approvals of leases and issuance of permits, are needed for the BIA to fulfill a portion of its trust responsibility to the Osage and to facilitate the development of the mineral estate. The EIS will replace the 1979 Environmental Assessment for the Oil and Gas Leasing Program of the Osage Indian Tribe.

The DEIS analyzes three alternatives for managing oil and gas development in Osage County, one of which is the No Action Alternative. The alternatives represent the range of reasonable actions that could be taken to satisfy the purpose of and need for the BIA's action. The objective of the alternatives is, to the extent possible, to minimize potential adverse impacts on landowners, wildlife, and natural and cultural resources from noise, traffic, excavations, dust, and other disturbances associated with construction and operations under oil and gas leases. The alternatives for the Osage County Oil and Gas EIS were developed through public scoping, an alternatives development workshop with cooperating agencies, and a draft alternatives concepts public listening session.

Under the alternatives, the BIA would apply varying levels of resource conservation measures to oil and gas activities in Osage County, ranging from (1) the existing situation, to (2) an expanded list of measures to provide certainty to lessees and to streamline the permitting process, to (3) a further expanded list of measures to add protection for specific areas where sensitive resources are located. The BIA is considering applying resource conservation measures to three types of activities under oil and gas leases: (1) Non-permitted lease activities, (2) activities within the scope of the 2015 Workover Programmatic Environmental Assessment, and (3) Applications for Permit to Drill and other permitted activities.

The BIA has provided extensive opportunities for meaningful and substantive input and comments during the preparation of this DEIS. Those invited to participate in the process were the public, various groups, other Federal agencies, Tribal members, and State and local governments.

Public involvement for the Osage County Oil and Gas EIS has consisted of the following:

• Public scoping comment period from July 26, 2013, to January 31, 2014;

• Public outreach via bulletins, newspaper announcements, public meetings, and a project Web site;

• A public listening session held in Pawhuska, Oklahoma, on March 9, 2015;

• Collaboration with Federal, State, local, and Tribal governments and cooperating agencies and entities; and

• Public review of and comment on this DEIS.

Directions for Submitting Comments: Please include your name, return address, and the caption ''DEIS Comments, Osage County Oil and Gas EIS'' on the first page of your written comments.

Public Comment Availability: Written comments, including names and addresses of respondents, will be available for public review at the BIA, 813 Grandview, Pawhuska, Oklahoma, during regular business hours, 8 a.m. to 4:30 p.m., Monday through Friday, except holidays. Before including your address, telephone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information— may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Authority: This notice is published in accordance with Section 1503.1 of the Council on Environmental Quality regulations (40 CFR part 1500 *et seq.*) and the Department of the Interior Regulations (43 CFR part 46) implementing the procedural requirements of the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*), and in accordance with the authority delegated to the Assistant Secretary—Indian Affairs in Part 209 of the Department Manual.

Dated: November 3, 2015.

Michael S. Black,

Director, Bureau of Indian Affairs.

[FR Doc. 2015–28507 Filed 11–6–15; 8:45 am]

BILLING CODE 4337–15–P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[16XL LLIDB00100 LF1000000.HT0000 LXSS024D0000 241A 4500087758]

Notice of Public Meeting: Resource Advisory Council (RAC) to the Boise District

AGENCY: Bureau of Land Management, U.S. Department of the Interior.

ACTION: Notice of public meeting.

SUMMARY: In accordance with the Federal Land Policy and Management Act (FLPMA) and the Federal Advisory Committee Act of 1972 (FACA), the U.S. Department of the Interior, Bureau of Land Management (BLM) Boise District Resource Advisory Council (RAC), will hold a meeting as indicated below.

DATES: The meeting will be held December 9, 2015, at the Boise District Office, 3948 Development Avenue, Boise, Idaho 83705 beginning at 9:00 a.m. and adjourning at 3:00 p.m. Members of the public are invited to attend. A public comment period will be held from 11:00 a.m. to 11:10 a.m.

FOR FURTHER INFORMATION CONTACT: MJ Byrne, Public Affairs Officer and RAC Coordinator, BLM Boise District, 3948 Development Ave., Boise, Idaho 83705, telephone (208) 384–3393.

SUPPLEMENTARY INFORMATION: The 15-member Council advises the Secretary of the Interior, through the BLM, on a variety of planning and management issues associated with public land management in southwestern Idaho. During the December meeting the Boise District RAC will receive updates on the Bruneau Owyhee Sage-grouse Habitat Project (BOSH) and Tri-State planning process. BLM staff will update RAC members on the travel plan process and upcoming landscape projects. BLM staff will discuss the Soda fire ESR (emergency stabilization and rehabilitation) plan and recent prescribed burns. Agenda items and location may be modified due to changing circumstances. The public may present written or oral comments to members of the Council. At each full RAC meeting, time is provided in the agenda for hearing public comments. Depending on the number of persons wishing to comment and time available, the time for individual oral comments may be limited. Individuals who plan to attend and need special assistance should contact the BLM Coordinator as provided above. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 1–800–877–8339 to contact Ms. Byrne. The FIRS is available 24 hours a day, 7 days a week, to leave a message or question with Ms. Byrne. You will receive a reply during normal business hours.

Jenifer L. Arnold,

Acting District Manager.

[FR Doc. 2015–28470 Filed 11–6–15; 8:45 am]

BILLING CODE 4310–GG–P

INTERNATIONAL TRADE COMMISSION

[Investigation No. 1210–006]

WCO Sixth Review Cycle: Request for Proposals To Amend the International Harmonized System for Implementation in 2022

AGENCY: United States International Trade Commission.

ACTION: Institution of an investigation for the purpose of soliciting and considering proposals to amend the international Harmonized System tariff nomenclature for possible implementation in 2022.

SUMMARY: The Commission, pursuant to section 1210(b) of the Omnibus Trade and Competitiveness Act of 1988 (19 U.S.C. 3010(b), is requesting proposals from interested persons and agencies to amend the International Harmonized Commodity Description and Coding System (Harmonized System or HS) in connection with the Sixth Review Cycle of the World Customs Organization (WCO). The Commission will review the proposals in consultation with U.S. Customs and Border Protection (Customs) and the U.S. Department of Commerce (Commerce). Subject to the policy direction of the Office of the United States Trade Representative (USTR), the Commission will formulate technical proposals for possible

submission by the U.S. Government to the WCO in Brussels, Belgium.

DATES: February 29, 2016: Deadline for filing written proposals with the Commission.

ADDRESSES: All Commission offices are located in the United States International Trade Commission Building, 500 E Street SW., Washington, DC. All written submissions should be addressed to the Secretary, United States International Trade Commission, 500 E Street SW., Washington, DC 20436. The public record for this collection of proposals may be viewed on the Commission's electronic docket (EDIS) at *http://www.usitc.gov/secretary/edis.htm.*

FOR FURTHER INFORMATION CONTACT: James R. Holbein, Director, Office of Tariff Affairs and Trade Agreements, (202–205–2593, fax 202–205–2616 (*james.holbein@usitc.gov*) or Barbara Elkins, Attorney-Advisor, (202–205–2253) (*barbara.elkins@usitc.gov*). The media should contact Margaret O'Laughlin, Office of External Affairs (202–205–1819. (*margaret.olaughlin@usitc.gov*). Hearing impaired individuals may obtain information on this matter by contacting the Commission's TDD terminal at 202–205–1810. General information concerning the Commission may also be obtained by accessing its Internet Web site (*http://www.usitc.gov/*). Persons with mobility impairments who will need special assistance in gaining access to the Commission should contact the Office of the Secretary at 202–205–2000.

SUPPLEMENTARY INFORMATION:

Background

The Harmonized Tariff Schedule of the United States (HTS) was approved by Congress in the 1988 Act and became effective on January 1, 1989. The HTS incorporates within its legal structure the rules of interpretation, legal notes, and nomenclature categories of the international HS, and provides additional product provisions for U.S. rate of duty and statistical purposes.

In order that the HS might be updated over time, Congress enacted several provisions of law that facilitate such updates, including section 1210 of the 1988 Act. Section 1210 provides that the Commission, the Department of the Treasury, and Commerce, subject to the policy direction of the USTR, are to be primarily responsible for formulating U.S. Government positions on technical and procedural issues and to represent the U.S. Government with respect to the activities of the WCO Council relating to the International Convention on the Harmonized Commodity Description and Coding System (Convention). Customs, now part of the Department of Homeland Security, represents the Department of the Treasury.) Section 1210(b) of the 1988 Act calls upon the three agencies to formulate technical proposals that are appropriate or required to assure that the U.S. contribution to the development of the Convention recognizes the needs of the U.S. business community for a Convention which reflects sound principles of commodity identification, modern producing methods, and current trading patterns and practices. Section 1210(b) also requires that the three agencies solicit and consider the views of interested parties in the private sector and interested Federal agencies.

Following enactment of the 1988 Act, the USTR issued a notice stating that the Commission would ''lead the U.S. delegation to international working parties and HSC subcommittees responsible for considering amendments to the HS in order to keep the Harmonized System abreast of changes in technology and patterns of international trade and shall ensure that U.S. technical positions reflect the needs of the business community'' (53 FR 45646, Nov. 10, 1988). Pursuant to that direction, the Commission leads the U.S. delegation to the HS Review Sub-Committee (RSC) and is therefore seeking the input of the trading community to identify possible HS changes.

Shortly after implementation of the HS in 1988, the RSC began a series of systematic reviews of the HS. Reviews result in WCO recommendations to those countries using the HS, so that they have a basis for updating their national tariff schedule to reflect international amendments. In November 2014 the RSC began its Sixth Review Cycle and invited member countries to submit proposals to amend the HS. The RSC will examine the proposals submitted, and it will forward its final proposed amendments to the HSC in November 2018. Thereafter the HSC will consider and agree upon the changes to be included in the WCO recommendation scheduled to be issued in June 2019. Members are then expected to implement the agreed changes under their domestic legal processes, with a January 1, 2022 targeted date for implementation of this set of amendments by all countries using the HS. The U.S. process for implementing changes is set out in sections 1205–1206 of the 1988 Act.

An up-to-date copy of the Harmonized Tariff Schedule of the United States (HTS), which incorporates the international HS in its overall structure, can be found on the Commission's Web site (*http://www.usitc.gov/tata/hts/bychapter/index.htm*). Hard copies and electronic copies on CD can be found at many of the 1,400 Federal Depository Libraries located throughout the United States and its territories; further information about these locations can be found at *http://www.gpoaccess.gov/fdlp.html* or by contacting GPO Access at the Government Printing Office (866–512–1800).

Request for Proposals: The Commission is seeking proposals from interested parties, associations, and government agencies for specific modifications to the international Harmonized System. Such proposals will be reviewed in consultation with CBP and Commerce for transmission to USTR. More specifically, proposals are requested relating to section and chapter notes, and the texts of 4-digit headings and 6-digit subheadings that describe new products or technologies, modify or eliminate unclear or obsolete categories, or otherwise advance the goals set out by the HS Convention. Proposals received will be posted on the Commission's electronic docketing system (EDIS) (omitting any confidential business information). Proposals should be submitted in writing and comply with the ''Written Submissions'' section below.

Proposals should include specific language for HS amendment text, appropriate descriptive comments, and, to the extent available, relevant trade data. Proposals should be confined to only one or more of the following types of change:

—Deletion of HS headings or subheadings with low trade volume;
—Creation of separate 4-digit headings or 6-digit subheadings to identify types of products that are now important in international trade;
—Simplification of the HS, whether by the modification of provisions for greater clarity or the elimination of provisions that are difficult to administer; and/or
—Changes that would improve the classification of products, especially those being exported from the United States, or assist in the administration of the HS and the more uniform classification of goods internationally.

Proposals should not request any of the following types of change: (1) A change to U.S. national-level provisions (including Additional U.S. Notes, 8-digit subheadings, and 10-digit statistical annotations); (2) a change in a tariff rate or change that otherwise affects tariff rates; or (3) a change to the HS Explanatory Notes.[1]

Consideration of Proposals Received: Proposals received in connection with this notice will be considered by the interagency U.S. delegation to the RSC. The Commission will initially receive the proposals and will consult informally with the requesters, other interested parties, and U.S. Government agencies, particularly Customs and Commerce (principally the U.S. Census Bureau). Such consultations will involve technical aspects of the proposals, levels of trade that would be affected, the extent of U.S. import and export interests, and the wording of existing HS provisions. In the course of these consultations, the Commission may refine proposed HS language to take into account sound nomenclature principles, WCO criteria, changes in technology, and levels or patterns of trade. Requesters may also change or withdraw their proposals during this consultation period. Customs and Commerce will also review the proposals and consult informally with the Commission and other Government agencies as part of the process through which the U.S. Government determines which proposals to advance to the WCO. The interagency U.S. delegation will seek to advance for introduction at the WCO the proposals that it considers likely to advance U.S. interests and meet the criteria and considerations described above. Proposals that are received later in the process may need to be submitted for consideration during the next RSC review cycle.

Once the WCO Council makes recommendations as part the Sixth Review Cycle, the Commission will, pursuant to section 1205 of the 1988 Act, institute an investigation and prepare a report containing such recommendations to the President for the changes in the HTS as it considers necessary or appropriate to conform the HTS to the amendments recommended by the WCO Council.

Written Submissions: Interested persons and agencies are invited to submit written proposals, which should be addressed to the Secretary and received no later than February 29, 2016. Submissions should be marked to refer to ''Investigation No. 1210–006''.

All written submissions must conform with the provisions of § 201.8 of the *Commission's Rules of Practice and Procedure* (19 CFR 201.8). Section 201.8 and the Commission's Handbook on Filing Procedures require that interested parties file documents electronically on or before the filing deadline and submit eight (8) true paper copies by 12 p.m. eastern time on the next business day. In the event that confidential treatment of a document is requested, interested parties must file, at the same time as the eight paper copies, at least four (4) additional true paper copies in which the confidential information must be deleted (see the following paragraph for further information regarding confidential business information). Persons with questions regarding electronic filing should contact the Office of the Secretary (202–205–2000).

Any submissions that contain confidential business information (CBI) must also conform with the requirements of § 201.6 of the *Commission's Rules of Practice and Procedure* (19 CFR 201.6). Section 201.6 of the rules requires that the cover of the document and the individual pages be clearly marked as to whether they are the ''confidential'' or ''non-confidential'' version, and that the confidential business information be clearly identified by means of brackets. All written submissions, except for confidential business information, will be made available for inspection by interested parties.

Confidential business information received in the investigation may be made available to Customs, Census, and the USTR during the examination of these proposals. The Commission will not otherwise publish or release any confidential business information received, including to other government agencies or other persons.

By order of the Commission.

Dated: November 4, 2015.

Lisa R. Barton,

Secretary to the Commission.

[FR Doc. 2015–28429 Filed 11–6–15; 8:45 am]

BILLING CODE 7020–02–P

[1] The HS Explanatory Notes, which are maintained by the WCO, are reviewed separately. Requests for changes to current Explanatory Notes (not arising from potential 2022 legal amendments to the HS) may be sent by a WCO member government directly to the WCO's Harmonized System Committee (the parent committee to the RSC) at any time. Government agencies and private sector parties interested in requesting a change should contact the Commission (see contacts above) or the following Customs officials: Myles B. Harmon, Director, Commercial & Trade Facilitation Division, 202–325–0276, or Ieva O'Rourke, Chief, Tariff Classification & Marking Branch, 202–325–0298.

DEPARTMENT OF LABOR

Office of the Secretary

Agency Information Collection Activities; Submission for OMB Review; Comment Request; Unemployment Insurance Title XII Advances and Voluntary Repayment Process

ACTION: Notice.

SUMMARY: The Department of Labor (DOL) is submitting the Employment and Training Administration (ETA) sponsored information collection request (ICR) titled, ''Unemployment Insurance Title XII Advances and Voluntary Repayment Process,'' to the Office of Management and Budget (OMB) for review and approval for continued use, without change, in accordance with the Paperwork Reduction Act of 1995 (PRA), 44 U.S.C. 3501 *et seq.* Public comments on the ICR are invited.

DATES: The OMB will consider all written comments that agency receives on or before December 9, 2015.

ADDRESSES: A copy of this ICR with applicable supporting documentation; including a description of the likely respondents, proposed frequency of response, and estimated total burden may be obtained free of charge from the RegInfo.gov Web site at *http://www.reginfo.gov/public/do/PRAViewICR?ref_nbr=201506-1205-002* (this link will only become active on the day following publication of this notice) or by contacting Michel Smyth by telephone at 202–693–4129, TTY 202–693–8064, (these are not toll-free numbers) or by email at *DOL_PRA_PUBLIC@dol.gov.*

Submit comments about this request by mail or courier to the Office of Information and Regulatory Affairs, Attn: OMB Desk Officer for DOL–ETA, Office of Management and Budget, Room 10235, 725 17th Street NW., Washington, DC 20503; by Fax: 202–395–5806 (this is not a toll-free number); or by email: *OIRA_submission@omb.eop.gov.* Commenters are encouraged, but not required, to send a courtesy copy of any comments by mail or courier to the U.S. Department of Labor-OASAM, Office of the Chief Information Officer, Attn: Departmental Information Compliance Management Program, Room N1301, 200 Constitution Avenue NW., Washington, DC 20210; or by email: *DOL_PRA_PUBLIC@dol.gov.*

FOR FURTHER INFORMATION CONTACT: Michel Smyth by telephone at 202–693–4129, TTY 202–693–8064, (these are not toll-free numbers) or by email at *DOL_PRA_PUBLIC@dol.gov.*

Authority: 44 U.S.C. 3507(a)(1)(D).

SUPPLEMENTARY INFORMATION: This ICR seeks to extend PRA authority for the Unemployment Insurance Title XII Advances and Voluntary Repayment Process information collection requirements specified in Unemployment Insurance Program Letter 32–09. This information collection allows a State to maintain a process for the Governor to request advances and repay advances through correspondence with the Secretary of Labor. Social Security Act section 1201(a) authorizes this information collection. *See* 42 U.S.C. 1321(a).

This information collection is subject to the PRA. A Federal agency generally cannot conduct or sponsor a collection of information, and the public is generally not required to respond to an information collection, unless it is approved by the OMB under the PRA and displays a currently valid OMB Control Number. In addition, notwithstanding any other provisions of law, no person shall generally be subject to penalty for failing to comply with a collection of information that does not display a valid Control Number. *See* 5 CFR 1320.5(a) and 1320.6. The DOL obtains OMB approval for this information collection under Control Number 1205–0199.

OMB authorization for an ICR cannot be for more than three (3) years without renewal, and the current approval for this collection is scheduled to expire on December 31, 2015. The DOL seeks to extend PRA authorization for this information collection for three (3) more years, without any change to existing requirements. The DOL notes that existing information collection requirements submitted to the OMB receive a month-to-month extension while they undergo review. For additional substantive information about this ICR, see the related notice published in the **Federal Register** on May 14, 2015 (80 FR 27707).

Interested parties are encouraged to send comments to the OMB, Office of Information and Regulatory Affairs at the address shown in the **ADDRESSES** section within thirty (30) days of publication of this notice in the **Federal Register**. In order to help ensure appropriate consideration, comments should mention OMB Control Number 1205–0199. The OMB is particularly interested in comments that:

• Evaluate whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information will have practical utility;

• Evaluate the accuracy of the agency's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used;

• Enhance the quality, utility, and clarity of the information to be collected; and

• Minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, *e.g.,* permitting electronic submission of responses.

Agency: DOL–ETA.

Title of Collection: Unemployment Insurance Title XII Advances and Voluntary Repayment Process.

OMB Control Number: 1205–0199.

Affected Public: State, Local, and Tribal Governments.

Total Estimated Number of Respondents: 5.

Total Estimated Number of Responses: 45.

Total Estimated Annual Time Burden: 45 hours.

Total Estimated Annual Other Costs Burden: $0.

Dated: November 3, 2015.

Michel Smyth,

Departmental Clearance Officer.

[FR Doc. 2015–28407 Filed 11–6–15; 8:45 am]

BILLING CODE 4510–FW–P

NATIONAL FOUNDATION ON THE ARTS AND THE HUMANITIES

Institute of Museum and Library Services

Sunshine Act Meeting of the National Museum and Library Services Board

AGENCY: Institute of Museum and Library Services (IMLS), NFAH.

ACTION: Notice of meeting.

SUMMARY: The National Museum and Library Services Board, which advises the Director of the Institute of Museum and Library Services on general policies with respect to the duties, powers, and authority of the Institute relating to museum, library and information services, will meet on November 18, 2015.

DATES: Wednesday, November 18, 2015, from 8:30 a.m. to 2:30 p.m. CST.

ADDRESSES: The meeting will be held at the Sheraton New Orleans, Endymion/Mid-City Rooms, 8th Floor, 500 Canal Street, New Orleans, LA 70130.

Status: Part of this meeting will be open to the public. The rest of the meeting will be closed pursuant to subsections (c)(4) and (c)(9) of section 552b of Title 5, United States Code because the Board will consider information that may disclose: Trade secrets and commercial or financial information obtained from a person and privileged or confidential; and information the premature disclosure of which would be likely to significantly frustrate implementation of a proposed agency action.

Agenda: Thirty-Second Meeting of the National Museum and Library Services Board Meeting:

Executive Session—8:30 a.m.–9:15 a.m.

(Closed to the Public)

Morning Session—9:15 a.m.–11:10 a.m.

I. Welcome
II. Director's Report
III. Financial Update
IV. Office of Communications and Government Affairs Update
Break
V. Office of Museum Services Update
VI. Office of Library Services Update
(Open to the Public)

Afternoon Session—12:30 p.m.–2:30 p.m.

VII. Board Program
(Open to the Public)

FOR FURTHER INFORMATION CONTACT: Katherine Maas, Program Specialist, Institute of Museum and Library Services, 1800 M Street NW., 9th Floor, Washington, DC 20036. Telephone: (202) 653–4676. Please provide advance notice of any special needs or accommodations.

Dated: November 5, 2015.

Andrew Christopher,

Associate General Counsel.

[FR Doc. 2015–28619 Filed 11–5–15; 4:15 pm]

BILLING CODE 7036–01–P

NATIONAL SCIENCE FOUNDATION

Notice of Permits Issued Under the Antarctic Conservation Act of 1978

AGENCY: National Science Foundation.

ACTION: Notice of permits issued.

SUMMARY: The National Science Foundation (NSF) is required to publish notice of permits issued under the Antarctic Conservation Act of 1978. This is the required notice.

FOR FURTHER INFORMATION CONTACT: Nature McGinn, ACA Permit Officer, Division of Polar Programs, Rm. 755, National Science Foundation, 4201

Wilson Boulevard, Arlington, VA 22230, or by email: *ACApermits@nsf.gov.*

SUPPLEMENTARY INFORMATION: On September 28, 2015 the National Science Foundation published a notice in the **Federal Register** of a permit application received. The permit was issued on November 3, 2015 to: Michael J. Polito, Permit No. 2016–013.

Nadene G. Kennedy,

Polar Coordination Specialist, Division of Polar Programs.

[FR Doc. 2015–28388 Filed 11–6–15; 8:45 am]

BILLING CODE 7555–01–P

NATIONAL SCIENCE FOUNDATION

Advisory Committee for Computer and Information Science and Engineering; Notice of Meeting

In accordance with the Federal Advisory Committee Act (Pub. L. 92–463, as amended), the National Science Foundation (NSF) announces the following meeting:

NAME: Advisory Committee for Computer and Information Science and Engineering (CISE) (1115).

DATE/TIME: December 3, 2015: 11:30 a.m. to 5:30 p.m.; December 4, 2015: 8:30 a.m. to 12:15 p.m.

PLACE: National Science Foundation, 4201 Wilson Boulevard, Suite 1235, Arlington, Virginia 22230.

TYPE OF MEETING: OPEN.

CONTACT PERSON: Carmen Whitson, National Science Foundation, 4201 Wilson Boulevard, Suite 1105, Arlington, Virginia 22230; 703/292–8900.

PURPOSE OF MEETING: To advise NSF on the impact of its policies, programs and activities on the CISE community. To provide advice to the Assistant Director for CISE on issues related to long-range planning, and to form ad hoc subcommittees and working groups to carry out needed studies and tasks.

AGENDA:

- Overview and CISE Update
- Update on NSF Advanced Cyberinfrastructure major activities, recent new national initiatives, and computer science education efforts
- Working group breakout sessions and report out: New Partnership Models for CISE Research, Data Science
- Presentation and discussion on envisioning the future of CISE in 2025
- Discussion with NSF Director, Dr. France Córdova
- Closing remarks and wrap-up

Dated: November 14, 2015.

Crystal Robinson,

Committee Management Officer.

[FR Doc. 2015–28451 Filed 11–6–15; 8:45 am]

BILLING CODE 7555–01–P

NATIONAL SCIENCE FOUNDATION

Notice of Permit Applications Received Under the Antarctic Conservation Act of 1978

AGENCY: National Science Foundation.

ACTION: Notice of Permit Applications Received under the Antarctic Conservation Act of 1978, Public Law 95–541.

SUMMARY: The National Science Foundation (NSF) is required to publish a notice of permit applications received to conduct activities regulated under the Antarctic Conservation Act of 1978. NSF has published regulations under the Antarctic Conservation Act at title 45 part 670 of the Code of Federal Regulations. This is the required notice of permit applications received.

DATES: Interested parties are invited to submit written data, comments, or views with respect to this permit application by December 9, 2015. This application may be inspected by interested parties at the Permit Office, address below.

ADDRESSES: Comments should be addressed to Permit Office, Room 755, Division of Polar Programs, National Science Foundation, 4201 Wilson Boulevard, Arlington, Virginia 22230.

FOR FURTHER INFORMATION CONTACT: Nature McGinn, ACA Permit Officer, at the above address or *ACApermits@nsf.gov* or (703) 292–7149.

SUPPLEMENTARY INFORMATION: The National Science Foundation, as directed by the Antarctic Conservation Act of 1978 (Pub. L. 95–541), as amended by the Antarctic Science, Tourism and Conservation Act of 1996, has developed regulations for the establishment of a permit system for various activities in Antarctica and designation of certain animals and certain geographic areas a requiring special protection. The regulations establish such a permit system to designate Antarctic Specially Protected Areas.

Application Details

Permit Application: 2016–017

1. *Applicant:* Vincent LiCata Louisiana State University & Agricultural and Mechanical College, Baton Rouge, LA 70803–2701.

Activity for Which Permit Is Requested

ASPA entry; The applicant is an artist funded by the National Science Foundation's Antarctic Artist & Writer's program. The applicant is seeking a permit to be able to enter several ASPAs in order to take still and moving photos to re-stage iconic images from the Heroic Age, using contemporary researchers in present-day settings. These reenactments would be used to create moving photograph video installations with the purpose of connecting historical Antarctic exploration with modern research activities. In order to inspire and inform the public, the installation would tour to ~20 institutions over a period of 2 years. If approved, the applicant would be accompanied in by experienced field staff who is familiar with the environmental sensitivities of the Area and would ensure that the applicant acts in accordance with the management plan for the Area.''

Location

ASPA 121 Cape Royds; ASPA 122 Arrival Heights; ASPA 155 Cape Evans; ASPA 157 Backdoor Bay; ASPA 158 Hut Point.

Dates

January 1 to February 20, 2016.

Nadene G. Kennedy,

Polar Coordination Specialist, Division of Polar Programs.

[FR Doc. 2015–28381 Filed 11–6–15; 8:45 am]

BILLING CODE 7555–01–P

NATIONAL SCIENCE FOUNDATION

Notice of Permit Issued Under the Antarctic Conservation Act of 1978

AGENCY: National Science Foundation.

ACTION: Notice of Permit issued under the Antarctic Conservation Act of 1978, Public Law 95–541.

SUMMARY: The National Science Foundation (NSF) is required to publish a notice of permit issued under the Antarctic Conservation Act of 1978. This is the required notice.

FOR FURTHER INFORMATION CONTACT: Li Ling Hamady, ACA Permit Officer, Division of Polar Programs, Rm. 755, National Science Foundation, 4201 Wilson Boulevard, Arlington, VA 22230. Or by e-mail *ACApermits@nsf.gov.*

SUPPLEMENTARY INFORMATION: On September 25, 2015 the National Science Foundation published a notice in the **Federal Register** of a permit modification application received. The permit modification was issued on

November 3, 2015 to: Robert Pitman, Permit No. 2015–001.

Nadene G. Kennedy,

Polar Coordination Specialist, Division of Polar Programs.

[FR Doc. 2015–28380 Filed 11–6–15; 8:45 am]

BILLING CODE 7555–01–P

NATIONAL SCIENCE FOUNDATION

Proposal Review Panel for Computing and Communication Foundation; Notice of Meeting

In accordance with the Federal Advisory Committee Act (Pub. L. 92–463, as amended), the National Science Foundation announces the following meeting:

Name: Proposal Panel Review for Computing and Communication Foundations; Expeditions in Computing Program (#1192) Site Visit.

Date/Time: November 30, 2015, 7 p.m.–9 p.m.; December 1, 2015, 8 a.m.–8 p.m.; December 2, 2015, 8:30 a.m.–3 p.m.

Place: Penn State University, University Park, PA.

Type of Meeting: Partially Closed.

Contact Person: Ephraim Glinert, National Science Foundation, 4201 Wilson Boulevard, Room 1125, Arlington, VA 22230. Telephone: (703) 292–8930.

Purpose of Meeting: Site visit to assess the progress of the EIC Award: 1317560, ''Collaborative Research: Visual Cortex on Silicon'', and to provide advise and recommendations concerning further NSF support for the Center.

Agenda: EIC Site Visit.

Monday, November 30, 2015

7 p.m. to 9 p.m.: Closed.

Site Team and NSF Staff meets to discuss Site Visit materials, review process and charge.

Tuesday, December 1, 2015

8 a.m. to 1 p.m.: Open.

Presentations by Awardee Institution, faculty staff and students to Site Team and NSF Staff. Discussions, question and answer sessions.

1 p.m.–8 p.m.: Closed.

Draft report on education and research activities.

Wednesday, December 2, 2015

8:30 a.m.–Noon: Open.

Response presentations by Awardee Institution faculty staff to Site Team and NSF Staff. Discussions, question and answer sessions.

Noon to 3 p.m.: Closed.

Complete written site visit report with preliminary recommendations.

Reason for Closing: The proposals being reviewed include information of a proprietary or confidential nature, including technical information; financial data, such as salaries; and personal information concerning individuals associated with the proposals. These matters are exempt under 5 U.S.C. 552b(c), (4) and (6) of the Government in the Sunshine Act.

Dated: October 30, 2015.

Crystal Robinson,

Committee Management Officer.

[FR Doc. 2015–28450 Filed 11–6–15; 8:45 am]

BILLING CODE 7555–01–P

RAILROAD RETIREMENT BOARD

Privacy Act of 1974, as Amended; Notice of Computer Matching Program (Railroad Retirement Board and Social Security Administration, Match Number 1007)

AGENCY: Railroad Retirement Board (RRB).

ACTION: Notice of a renewal of an existing computer-matching program that expires on January 6, 2016.

SUMMARY: As required by the Privacy Act of 1974, as amended, the RRB is issuing public notice of its renewal of an ongoing computer-matching program with the Social Security Administration (SSA). The purpose of this notice is to advise individuals applying for or receiving benefits under the Railroad Retirement Act of the use made by RRB of this information obtained from SSA by means of a computer match. The RRB is also issuing public notice, on behalf of the SSA, of their intent to conduct a computer-matching program based on information provided to them by the RRB.

DATES: This matching program becomes effective as proposed without further notice on December 21, 2015. We will file a report of this computer-matching program with the Committee on Homeland Security and Governmental Affairs of the Senate; the Committee on Oversight and Government Reform of the House of Representatives; and the Office of Information and Regulatory Affairs, Office of Management and Budget (OMB).

ADDRESSES: Interested parties may comment on this publication by writing to Ms. Martha P. Rico, Secretary to the Board, Railroad Retirement Board, 844 North Rush Street, Chicago, Illinois 60611–2092.

FOR FURTHER INFORMATION CONTACT: Mr. Timothy Grant, Chief Privacy Officer, Railroad Retirement Board, 844 North Rush Street, Chicago, Illinois 60611–2092, telephone 312–751–4869 or email at *tim.grant@rrb.gov.*

SUPPLEMENTARY INFORMATION:

A. General

The Computer Matching and Privacy Protection Act of 1988, (Pub. L. 100–503), amended by the Privacy Act of 1974, (5 U.S.C. 552a) as amended, requires a Federal agency participating in a computer matching program to publish a notice in the **Federal Register** for all matching programs.

The Privacy Act, as amended, regulates the use of computer matching by Federal agencies when records contained in a Privacy Act System of Records are matched with other Federal, State, or local government records. It requires Federal agencies involved in computer matching programs to:

(1) Negotiate written agreements with the other agency or agencies participating in the matching programs;

(2) Obtain the approval of the matching agreement by the Data Integrity Boards (DIB) of the participating Federal agencies;

(3) Publish notice of the computer matching program in the **Federal Register**;

(4) Furnish detailed reports about matching programs to Congress and OMB;

(5) Notify applicants and beneficiaries that their records are subject to matching; and

(6) Verify match findings before reducing, suspending, terminating, or denying a person's benefits or payments. The last notice for this matching program was published in the **Federal Register** on June 10, 2013 (78 FR 34678).

B. RRB Computer Matches Subject to the Privacy Act

We have taken appropriate action to ensure that all of our computer matching programs comply with the requirements of the Privacy Act, as amended.

Notice of Computer Matching Program, RRB With the SSA, Match 1007

A. Name of Participating Agencies

Railroad Retirement Board (RRB) and the Social Security Administration (SSA), Match #1007.

B. Purpose of the Matching Program

The RRB will, on a daily basis, obtain from SSA a record of the wages reported to SSA for persons who have applied for benefits under the Railroad Retirement Act and a record of the amount of benefits paid by that agency to persons who are receiving or have applied for benefits under the Railroad Retirement Act. The wage information is needed to compute the amount of the tier I annuity component provided by sections 3(a), 4(a) and 4(f) of the Railroad Retirement Act (45 U.S.C. 231b(a), 45 U.S.C. 231c(a) and 45 U.S.C. 231c(f)). The benefit information is needed to adjust the tier I annuity component for the receipt of the Social Security benefit. This information is available from no other source.

Second, the RRB will receive from SSA the amount of certain social security benefits which the RRB pays on behalf of SSA. Section 7(b)(2) of the Railroad Retirement Act (45 U.S.C. 231f(b)(2)) provides that the RRB shall make the payment of certain social security benefits. The RRB also requires this information in order to adjust the amount of any annuity due to the receipt of a social security benefit. Section 10(a) of the Railroad Retirement Act (45 U.S.C. 231i(a)) permits the RRB to recover any overpayment from the accrual of social security benefits. This information is not available from any other source.

Third, once a year the RRB will receive from SSA a copy of SSA's Master Benefit Record for earmarked RRB annuitants. Section 7(b)(7)) of the Railroad Retirement Act (45 U.S.C. 231f(b)(7)) requires that SSA provide the requested information. The RRB needs this information to make the necessary cost-of-living computation adjustments quickly and accurately for those RRB annuitants who are also SSA beneficiaries.

SSA will receive weekly from RRB earnings information for all railroad employees. SSA will match the identifying information of the records furnished by the RRB against the identifying information contained in its Master Benefit Record and its Master Earnings File. If there is a match, SSA will use the RRB earnings to adjust the amount of Social Security benefits in its Annual Earnings Reappraisal Operation. This information is available from no other source.

SSA will also receive daily from RRB earnings information on selected individuals. The transfer of information may be initiated either by RRB or by SSA. SSA needs this information to determine eligibility to Social Security benefits and, if eligibility is met, to determine the benefit amount payable. Section 18 of the Railroad Retirement Act (45 U.S.C. 231q(2)) requires that earnings considered as compensation under the Railroad Retirement Act be considered as wages under the Social Security Act for the purposes of determining entitlement under the Social Security Act if the person has less than 10 years of railroad service or has 10 or more years of service but does not have a current connection with the railroad industry at the time of his/her death.

C. Authority for Conducting the Match

Section 7(b)(7) of the Railroad Retirement Act (45 U.S.C. 231f(b)(7)) provides that the Social Security Administration shall supply information necessary to administer the Railroad Retirement Act. Sections 202, 205(o) and 215(f) of the Social Security Act (42 U.S.C. 402, 405(o) and 415(f)) relate to benefit provisions, inclusion of railroad compensation together with wages for payment of benefits under certain circumstances, and the re-computation of benefits.

D. Categories of Records and Individuals Covered

All applicants for benefits under the Railroad Retirement Act and current beneficiaries will have a record of any social security wages and the amount of any social security benefits furnished to the RRB by SSA. In addition, all persons who ever worked in the railroad industry after 1936 will have a record of their service and compensation furnished to SSA by RRB.

The applicable RRB Privacy Act Systems of Records and their **Federal Register** citation used in the matching program are:

1. RRB–5, Master File of Railroad Employees' Creditable Compensation, September 30, 2014 (79 FR 58877)
2. RRB–22, Railroad Retirement, Survivor, Pensioner Benefit System, May 15, 2015 (80 FR 28018)

The applicable SSA Privacy Act Systems of Records used and their **Federal Register** citation used in the matching program are:

1. SSA 60–0058, Master Files of Social Security Number (SSN) Holders and SSN Applications (the Enumeration System), February 13, 2014 (79 FR 8780)
2. SSA/OS, 60–0059, Earnings Recording and Self-Employment Income System (MEF), January 11, 2006 (71 FR 1819)
3. SSA/ORSIS 60–0090, Master Beneficiary Record (MBR), July 5, 2013 (78 FR 40542)
4. SSA/ODISSIS 60–103, Supplemental Security Income Record and Special Veteran Benefits December 10, 2007 (72 FR 69723)
5. SSA/OPB 60–0269, Prisoner Update Processing System (PUPS), July 5, 2013 (78 FR 40542)

E. Inclusive Dates of the Matching Program

This matching program will become effective January 6, 2016 or 40 days after a copy of the agreement, as approved by the Data Integrity Board of each agency, is sent to Congress and the Office of Management and Budget, or 30 days after publication of this notice in the **Federal Register**, whichever date is latest. The matching program will continue for 18 months after the effective date and may be extended for an additional 12 months, if the conditions specified in 5 U.S.C. 552a(o)(2)(D) have been met. This matching program expires on July 6, 2017.

Dated: November 4, 2015.

By authority of the Board.

Martha P. Rico,

Secretary to the Board.

[FR Doc. 2015–28433 Filed 11–6–15; 8:45 am]

BILLING CODE 7905–01–P

SECURITIES AND EXCHANGE COMMISSION

[SEC File No. 270–232, OMB Control No. 3235–0225]

Proposed Collection; Comment Request

Upon Written Request, Copies Available From: Securities and Exchange Commission, Office of FOIA Services, 100 F Street NE., Washington, DC 20549–2736.

Extension:
Rule 17f–4.

Notice is hereby given that, pursuant to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501–3520) (the ''Paperwork Reduction Act''), the Securities and Exchange Commission (the ''Commission'') is soliciting comments on the collection of information summarized below. The Commission plans to submit this existing collection of information to the Office of Management and Budget for extension and approval.

Section 17(f) (15 U.S.C. 80a–17(f)) under the Investment Company Act of 1940 (the ''Act'') [1] permits registered management investment companies and their custodians to deposit the securities they own in a system for the central handling of securities (''securities depositories''), subject to rules adopted by the Commission.

Rule 17f–4 (17 CFR 270.17f–4) under the Act specifies the conditions for the use of securities depositories by funds [2] and their custodians.

[1] 15 U.S.C. 80a.

[2] As amended in 2003, rule 17f–4 permits any registered investment company, including a unit investment trust or a face-amount certificate company, to use a security depository. *See* Custody of Investment Company Assets With a Securities Depository, Investment Company Act Release No. 25934 (Feb. 13, 2003) (68 FR 8438 (Feb. 20, 2003)). The term ''fund'' is used in this Notice to mean a registered investment company.

The Commission staff estimates that 152 respondents (including an estimated 81 active funds that may deal directly with a securities depository, an estimated 50 custodians, and 21 possible securities depositories) [3] are subject to the requirements in rule 17f–4. The rule is elective, but most, if not all, funds use depository custody arrangements.[4]

Rule 17f–4 contains two general conditions. First, a fund's custodian must be obligated, at a minimum, to exercise due care in accordance with reasonable commercial standards in discharging its duty as a securities intermediary to obtain and thereafter maintain financial assets.[5] This obligation does not contain a collection of information because it does not impose identical reporting, recordkeeping or disclosure requirements. Funds and custodians may determine the specific measures the custodian will take to comply with this obligation.[6] If the fund deals directly with a depository, the depository's contract or written rules for its participants must provide that the depository will meet similar obligations, [7] which is a collection of information for purposes of the Paperwork Reduction Act. All funds that deal directly with securities depositories in reliance on rule 17f–4 should have either modified their contracts with the relevant securities depository, or negotiated a modification in the securities depository's written rules when the rule was amended. Therefore, we estimate there is no ongoing burden associated with this collection of information.[8]

Second, the custodian must provide, promptly upon request by the fund, such reports as are available about the internal accounting controls and financial strength of the custodian.[9] If a fund deals directly with a depository, the depository's contract with or written rules for its participants must provide that the depository will provide similar financial reports,[10] which is a collection of information for purposes of the Paperwork Reduction Act. Custodians and depositories usually transmit financial reports to funds twice each year.[11] The Commission staff estimates that 50 custodians spend approximately 926 hours (by support staff) annually in transmitting such reports to funds.[12] In addition, approximately 81 funds (*i.e.,* two percent of all funds) deal directly with a securities depository and may request periodic reports from their depository. Commission staff estimates that depositories spend approximately 19 hours (by support staff) annually transmitting reports to the 81 funds.[13] The total annual burden estimate for compliance with rule 17f–4's reporting requirement is therefore 945 hours.[14]

If a fund deals directly with a securities depository, rule 17f–4 requires that the fund implement internal control systems reasonably designed to prevent an unauthorized officer's instructions (by providing at least for the form, content, and means of giving, recording, and reviewing all officers' instructions).[15] All funds that seek to rely on rule 17f–4 should have already implemented these internal control systems when the rule was amended. Therefore, there is no ongoing burden associated with this collection of information requirement.[16]

Based on the foregoing, the Commission staff estimates that the total annual hour burden of the rule's collection of information requirement is 945 hours.

The estimate of average burden hours is made solely for the purposes of the Paperwork Reduction Act. This estimate is not derived from a comprehensive or even representative survey or study of the costs of Commission rules.

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid control number.

Written comments are invited on : (a) Whether the collection of information is necessary for the proper performance of the functions of the Commission, including whether the information will have practical utility; (b) the accuracy of the Commission's estimate of the burden of the collection of information; (c) ways to enhance the quality, utility, and clarity of the information collected; and (d) ways to minimize the burdens of the collection of information on respondents, including through the use of automated collection techniques or other forms of information technology. Consideration will be given to comments and suggestions submitted in writing within 60 days of this publication.

Please direct your written comments to Pamela Dyson, Director/Chief Information Officer, Securities and Exchange Commission, C/O Remi Pavlik-Simon, 100 F Street NE., Washington, DC 20549; or send an email to: *PRA_Mailbox@sec.gov.*

Dated: November 3, 2015.

Brent J. Fields,

Secretary.

[FR Doc. 2015–28399 Filed 11–6–15; 8:45 am]

BILLING CODE 8011–01–P

[3] The Commission staff estimates that, as permitted by the rule, an estimated 2% of all active funds may deal directly with a securities depository instead of using an intermediary. The number of custodians is estimated based on information from Morningstar Direct[SM]. The Commission staff estimates the number of possible securities depositories by adding the 12 Federal Reserve Banks and 9 active registered clearing agencies. The Commission staff recognizes that not all of these entities may currently be acting as a securities depository for fund securities.

[4] Based on responses to Item 18 of Form N–SAR (17 CFR 274.101), approximately 97 percent of funds' custodians maintain some or all fund securities in a securities depository pursuant to rule 17f–4.

[5] Rule 17f–4(a)(1). This provision incorporates into the rule the standard of care provided by section 504(c) of Article 8 of the Uniform Commercial Code when the parties have not agreed to a standard. Rule 17f–4 does not impose any substantive obligations beyond those contained in Article 8. Uniform Commercial Code, Revised Article 8—Investment Securities (1994 Official Text with Comments) (''Revised Article 8'').

[6] Moreover, the rule does not impose any requirement regarding evidence of the obligation.

[7] Rule 17f–4(b)(1)(i).

[8] The Commission staff assumes that new funds relying on 17f–4 would choose to use a custodian instead of directly dealing with a securities depository because of the high costs associated with maintaining an account with a securities depository. Thus new funds would not be subject to this condition.

[9] Rule 17f–4(a)(2).

[10] Rule 17f–4(b)(1)(ii).

[11] The estimated 50 custodians would handle requests for reports from an estimated 3,968 fund clients (approximately 80 fund clients per custodian) and the depositories from the remaining 81 funds that choose to deal directly with a depository. It is our understanding based on staff conversations with industry representatives that custodians and depositories transmit these reports to clients in the normal course of their activities as a good business practice regardless of whether they are requested. Therefore, for purposes of this Paperwork Reduction Act estimate, the Commission staff assumes that custodians transmit the reports to all fund clients.

[12] (3,968 fund clients × 2 reports) = 7,936 transmissions. The staff estimates that each transmission would take approximately 7 minutes for a total of approximately 926 hours (7 minutes × 7,936 transmissions).

[13] (81 fund clients who may deal directly with a securities depository × 2 reports) = 162 transmissions. The staff estimates that each transmission would take approximately 7 minutes for a total of approximately 19 hours (7 minutes × 162 transmissions).

[14] 926 hours for custodians and 19 hours for securities depositories.

[15] Rule 17f–4(b)(2).

[16] The Commission staff assumes that new funds relying on 17f–4 would choose to use a custodian instead of directly dealing with a securities depository because of the high costs associated with maintaining an account with a securities depository. Thus new funds would not be subject to this condition.

SECURITIES AND EXCHANGE COMMISSION

[Release No. 34–76335; File No. SR–NASDAQ–2015–112]

Self-Regulatory Organizations; The NASDAQ Stock Market LLC; Notice of Designation of a Longer Period for Commission Action on Proposed Rule Change To Establish a Retail Order Process Known as ''RTFY''

November 3, 2015.

On September 21, 2015 The NASDAQ Stock Market LLC (''NASDAQ'') filed with the Securities and Exchange Commission (''Commission''), pursuant to section 19(b)(1) of the Securities Exchange Act of 1934 (''Act'') [1] and Rule 19b–4 thereunder,[2] a proposed rule change to adopt a new routing option, the Retail Order Process (''RTFY''). The proposed rule change was published for comment in the **Federal Register** on October 1, 2015.[3] The Commission received two comment letters on the proposed rule change.[4] NASDAQ submitted a response to these comments.[5]

Section 19(b)(2) of the Act [6] provides that, within 45 days of the publication of notice of the filing of a proposed rule change, or within such longer period up to 90 days as the Commission may designate if it finds such longer period to be appropriate and publishes its reasons for so finding or as to which the self-regulatory organization consents, the Commission shall either approve the proposed rule change, disapprove the proposed rule change, or institute proceedings to determine whether the proposed rule change should be disapproved. The 45th day for this filing is November 15, 2015. The Commission finds that it is appropriate to designate a longer period within which to take action on the proposed rule change so that it has sufficient time to consider the proposed rule change, the comments received, and the Nasdaq Response. Therefore, the Commission is extending this 45-day time period.

Accordingly, the Commission, pursuant to section 19(b)(2) of the Act,[7] designates December 30, 2015, as the date by which the Commission should either approve or disapprove or institute proceedings to determine whether to disapprove the proposed rule change (File No. SR–NASDAQ–2015–112).

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.[8]

Brent J. Fields,

Secretary.

[FR Doc. 2015–28405 Filed 11–6–15; 8:45 am]

BILLING CODE 8011–01–P

[1] 15 U.S.C. 78s(b)(1).

[2] 17 CFR 240.19b–4.

[3] *See* Securities Exchange Act Release No. 75987 (September 25, 2015), 80 FR 59210 (''Notice'').

[4] *See* letter from Joseph Saluzzi, Themis Trading LLC, to the Commission, dated September 29, 2015 (''Themis Letter''); letter from Suzanne Shatto to the Commission, dated October 6, 2015 (''Shatto Letter'').

[5] *See* letter from Jonathan F. Cayne, Senior Associate General Counsel, NASDAQ, to Brent J. Fields, Secretary, Commission, dated October 22, 2015 (''NASDAQ Response'').

[6] 15 U.S.C. 78s(b)(2).

[7] 15 U.S.C. 78s(b)(2).

[8] 17 CFR 200.30–3(a)(31).

SECURITIES AND EXCHANGE COMMISSION

[Release No. 34–76334; File No. SR–ISE–2015–35]

Self-Regulatory Organizations; International Securities Exchange; Notice of Filing of Proposed Rule Change To Comply With the Requirements of Rule 1004 of Regulation SCI

November 3, 2015.

Pursuant to section 19(b)(1) of the Securities Exchange Act of 1934 (the ''Act''),[1] and Rule 19b–4 thereunder,[2] notice is hereby given that on October 23, 2015, the International Securities Exchange, LLC (the ''Exchange'' or the ''ISE'') filed with the Securities and Exchange Commission the proposed rule change as described in Items I, II, and III below, which Items have been prepared by the self-regulatory organization. The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

I. Self-Regulatory Organization's Statement of the Terms of Substance of the Proposed Rule Change

ISE proposes to designate all members that function as Primary Market Makers (''PMMs'') and Linkage Handlers (collectively ''designated members'') as necessary for the maintenance of a fair and orderly market should business continuity and disaster recovery plans (collectively ''DR Plans'') be activated, and proposes to require designated members to participate in scheduled functional and performance testing of the operation of such DR Plans by amending amend Rules 803, Obligations of Market Makers, and 1903, Order Routing to Other Exchanges. The text of the proposed rule change is available on the Exchange's Web site at *www.ise.com,* at the principal office of the Exchange, and at the Commission's Public Reference Room.

[1] 15 U.S.C. 78s(b)(1).

[2] 17 CFR 240.19b–4.

II. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

In its filing with the Commission, the self-regulatory organization included statements concerning the purpose of, and basis for, the proposed rule change and discussed any comments it received on the proposed rule change. The text of these statements may be examined at the places specified in Item IV below. The Exchange has prepared summaries, set forth in sections A, B, and C below, of the most significant aspects of such statements.

A. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

1. Purpose

Rule 1004 requires the establishment of standards for the designation of those members the Exchange reasonably determines are, taken as a whole, the minimum necessary for the maintenance of a fair and orderly market should the Exchange's business continuity and disaster recovery plans be activated. Rule 1004 also requires the Exchange to designate members pursuant to those standards and require participation by such members in scheduled functional and performance testing of the operation of such plans, in the manner and frequency specified by the Exchange, provided that such frequency shall not be less than once every 12 months. Therefore, in accordance with Rule 1004, the Exchange proposes to designate all PMMs [3] and Linkage Handlers,[4] as the minimum necessary for the maintenance of a fair and orderly market should the Exchange's DR Plans be activated. This proposed rule also mandates participation by designated members in scheduled functional and

[3] A PMM posts two-sided continuous quotations in all of the options classes to which it is appointed and undertakes special responsibilities for maintaining fair and orderly markets. PMM memberships are represented by PMM Trading Rights. The options classes trading on the ISE are divided into groups or ''bins'', each with one PMM. One PMM member may, however, represent more than one bin.

[4] A Linkage Handler is a broker that is unaffiliated with the Exchange with which the Exchange has contracted with to provide routing services, by routing certain orders, to other exchanges as agent in connection with the Options Order Protection and Locked/Crossed Market Plan. *See* .03 to Supplementary Material to Rule 1901.

performance testing of the operation of such DR Plans.

Background

On November 19, 2014, the Securities and Exchange Commission unanimously voted to adopt Regulation SCI, which is a set of rules designed to strengthen the technology infrastructure of the U.S. securities markets.[5] Specifically, the rules are designed to reduce the occurrence of systems issues, improve resiliency when systems problems do occur, and enhance the Commission's oversight and enforcement of securities market technology infrastructure.[6]

Regulation SCI applies to ''SCI entities,'' a term which includes SROs such as ISE. Regulation SCI requires SCI entities to, among other things, (1) establish written policies and procedures reasonably designed to ensure that their systems have levels of capacity, integrity, resiliency, availability, and security adequate to maintain their operational capability; (2) mandate participation by designated members in scheduled testing of the operation of their business continuity and disaster recovery plans, including backup systems, and to coordinate such testing on an industry- or sector-wide basis with other SCI entities; (3) take corrective action with respect to ''SCI events'' (such as systems disruptions, systems compliance issues, and systems intrusions), and to notify the Commission of such events; (4) disseminate information about certain SCI events to affected members and, for certain ''major'' SCI events, to all members; and (5) review their systems by objective, qualified personnel at least annually, to submit quarterly reports regarding completed, ongoing, and planned material changes to their SCI systems to the Commission, and to maintain certain books and records.[7]

Proposed Rule Change

Rule 1004 of Regulation SCI requires the establishment of standards for the designation of those members ISE reasonably determines are, taken as a whole, the minimum necessary for the maintenance of a fair and orderly market should the Exchange activate its DR Plans. To comply with this rule, the Exchange proposes to amend .02 of Supplementary Material to Rule 803, Obligations of Market Makers, and .03 of Supplementary Material to Rule 1903, Order Routing to Other Exchanges, by designating all members that function as PMMs and Linkage Handlers, respectively.[8]

ISE believes PMMs (together with Linkage Handlers) meet the requirements of Regulation SCI because they are vital to maintaining a fair and orderly market. Among other things, PMMs compete with other market makers [9] to improve the market in all series of options classes to which the PMM is appointed; make markets that are honored for the number of contracts entered into the Exchange's system in all series of options classes to which the PMM is appointed; update market quotations in response to changed market conditions in all series of options classes to which the PMM is appointed; and price option contracts fairly.[10] If the DR Plans are activated, PMMs will ensure ISE's market continues to run smoothly. Similarly, Linkage Handlers meet the requirements of Regulation SCI because they route orders to other exchanges when ISE is not at the National Best Bid or Offer (''NBBO''). Should the DR Plans be activated, Linkage Handlers will ensure that investors receive the best price available across all exchanges for their orders.

Rule 1004 also requires that the Exchange mandate participation by designated members in scheduled functional and performance testing of the operation of such plans, in the manner and frequency specified by the Exchange, provided that such frequency shall not be less than once every 12 months. The Exchange now proposes that PMMs and Linkage Handlers are required to participate in scheduled functional and performance testing of such plans at least once every 12 months. This testing will prepare the designated members for certain SCI events, and enable the market to continue operating without major issues during such events.

2. Statutory Basis

The Exchange believes that the proposed rule change is consistent with the requirements of the Act, and the rules and regulations thereunder that are applicable to a national securities exchange, and, in particular, with the requirements of section 6(b) of the Act.[11] In particular, the proposal is consistent with section 6(b)(5) of the Act,[12] because it is designed to promote just and equitable principles of trade, remove impediments to and perfect the mechanisms of a free and open market and a national market system and, in general, to protect investors and the public interest.

The Exchange believes the proposed rule is consistent with the Exchange Act because it complies with Regulation SCI's requirements. ISE's rule designates members it determines are necessary for the maintenance of a fair and orderly market if the Exchange's DR Plans are activated and mandates participation by designated members in scheduled functional and performance testing of the DR Plans at least once every 12 months.

The Exchange further believes the proposed rule change is consistent with the protection of investors and the public interest because ISE has designated PMMs, which maintain a fair and orderly market by making markets that are honored, competing with other market makers to improve the market, updating market quotations, and pricing option contracts fairly. Similarly, ISE has also designated Linkage Handlers, which route certain orders to other exchanges when ISE is not at the NBBO. This provides investors with the best price available across exchanges for their orders. Further, the proposed rule is consistent with the protection of investors and the public interest because, as proposed, these designated members are required to participate in functional and performance testing of the DR Plans. As a result, if the DR Plans are activated, the designated members and their systems will be prepared to handle a potential SCI event and ensure that investors can continue to trade during the event.

B. Self-Regulatory Organization's Statement on Burden on Competition

This proposed rule change does not impose any burden on competition that is not necessary or appropriate in furtherance of the purposes of the Exchange Act because ISE is implementing the requirements of Regulation SCI.

C. Self-Regulatory Organization's Statement on Comments on the Proposed Rule Change Received From Members, Participants or Others

The Exchange has neither solicited nor received written comments on this proposed rule change. The Exchange

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[5] *See* Securities Exchange Act Release No. 73639 (November 19, 2014), 79 FR 72252 (December 5, 2014) (''SCI Adopting Release'').

[6] Division of Trading and Markets, Responses to Frequently Asked Questions Concerning Regulation SCI at *https://www.sec.gov/divisions/marketreg/regulation-sci-faq.shtml.*

[7] *Id.*

[8] The Exchange notes that these designations are determined by the members' respective functions.

[9] Market makers refers to ''Competitive Market Makers'' and ''PMMs'' collectively. *See* Rule 100(a)(25).

[10] *See* Rule 803.

[11] 15 U.S.C. 78f(b).

[12] 15 U.S.C. 78f(b)(5).

has not received any written comments from members or other interested parties.

III. Date of Effectiveness of the Proposed Rule Change and Timing for Commission Action

Because the foregoing proposed rule change does not significantly affect the protection of investors or the public interest, does not impose any significant burden on competition, and, by its terms, does not become operative for 30 days from the date on which it was filed, or such shorter time as the Commission may designate, it has become effective pursuant to section 19(b)(3)(A) of the Act [13] and Rule 19b–4(f)(6) thereunder.[14] The Exchange provided the Commission with written notice of its intent to file the proposed rule change, along with a brief description and text of the proposed rule change, at least five business days prior to the date of filing the proposed rule change, or such shorter time as designated by the Commission, as required by Rule 19b–4(f)(6).

At any time within 60 days of the filing of such proposed rule change, the Commission summarily may temporarily suspend such rule change if it appears to the Commission that such action is necessary or appropriate in the public interest, for the protection of investors, or otherwise in furtherance of the purposes of the Act. If the Commission takes such action, the Commission shall institute proceedings to determine whether the proposed rule should be approved or disapproved.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether the proposed rule change is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic Comments

- Use the Commission's Internet comment form *http://www.sec.gov/rules/sro.shtml*); or
- Send an Email to *rule-comments@sec.gov*. Please include File No. SR–ISE–2015–35 on the subject line.

Paper Comments

- Send paper comments in triplicate to Brent J. Fields, Secretary, Securities and Exchange Commission, 100 F Street NE., Washington, DC 20549–1090.

All submissions should refer to File Number SR–ISE–2015–35. This file number should be included on the subject line if email is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commissions Internet Web site (*http://www.sec.gov/rules/sro.shtml*). Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for Web site viewing and printing in the Commission's Public Reference Room. Copies of such filing also will be available for inspection and copying at the principal office of the ISE. All comments received will be posted without change; the Commission does not edit personal identifying information from submissions. You should submit only information that you wish to make available publicly. All submissions should refer to File Number SR–ISE–2015–35 and should be submitted by November 30, 2015.

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.[15]

Brent J. Fields,

Secretary.

[FR Doc. 2015–28404 Filed 11–6–15; 8:45 am]

BILLING CODE 8011–01–P

[13] 15 U.S.C. 78s(b)(3)(A).

[14] 17 CFR 240.19b–4(f)(6).

[15] 17 CFR 200.30–3(a)(12).

SECURITIES AND EXCHANGE COMMISSION

In the Matter of Friendly Energy Exploration, Public Media Works, Inc., VRDT Corp., and Zoro Mining Corp., File No. 500–1; Order of Suspension of Trading

November 5, 2015.

It appears to the Securities and Exchange Commission that there is a lack of current and accurate information concerning the securities of Friendly Energy Exploration (CIK No. 1120434), a revoked Nevada corporation with its principal place of business listed as Carson City, Nevada, with stock quoted on OTC Link (previously, ''Pink Sheets'') operated by OTC Markets Group, Inc. (''OTC Link'') under the ticker symbol FEGR, because it has not filed any periodic reports since the period ended December 31, 2012. On December 16, 2014, the Division of Corporation Finance sent Friendly Energy Exploration a delinquency letter requesting compliance with their periodic filing obligations, but the letter was returned because of Friendly Energy Exploration's failure to maintain a valid address on file with the Commission, as required by Commission rules (Rule 301 of Regulation S–T, 17 CFR 232.301 and Section 5.4 of EDGAR Filer Manual).

It appears to the Securities and Exchange Commission that there is a lack of current and accurate information concerning the securities of Public Media Works, Inc. (CIK No. 1108730), a void Delaware corporation with its principal place of business listed as Los Angeles, California, with stock quoted on OTC Link under the ticker symbol PUBQQ, because it has not filed any periodic reports since the period ended November 30, 2012. On November 12, 2014, Public Media Works received a delinquency letter sent by the Division of Corporation Finance requesting compliance with their periodic filing obligations.

It appears to the Securities and Exchange Commission that there is a lack of current and accurate information concerning the securities of VRDT Corp. (CIK No. 1399480), a void Delaware corporation with its principal place of business listed as Rancho Cucamonga, California, with stock quoted on OTC Link under the ticker symbol VRDT, because it has not filed any periodic reports since the period ended December 31, 2012. On November 10, 2014, VRDT received a delinquency letter sent by the Division of Corporation Finance requesting compliance with their periodic filing obligations.

It appears to the Securities and Exchange Commission that there is a lack of current and accurate information concerning the securities of Zoro Mining Corp. (CIK No. 1329484), a revoked Nevada corporation with its principal place of business listed as Tucson, Arizona, with stock quoted on OTC Link under the ticker symbol ZORM, because it has not filed any periodic reports since the period ended January 31, 2013. On November 7, 2014, the Division of Corporate Finance sent Zoro Mining a delinquency letter requesting compliance with their periodic filing obligations, but the letter was returned because of Zoro Mining's failure to maintain a valid address on file with the Commission, as required by Commission rules (Rule 301 of Regulation S–T, 17 CFR 232.301 and Section 5.4 of EDGAR Filer Manual).

The Commission is of the opinion that the public interest and the protection of investors require a suspension of trading in the securities of the above-listed companies.

Therefore, it is ordered, pursuant to Section 12(k) of the Securities Exchange Act of 1934, that trading in the securities of the above-listed companies is suspended for the period from 9:30 a.m. EST on November 5, 2015, through 11:59 p.m. EST on November 18, 2015.

By the Commission.

Jill M. Peterson,

Assistant Secretary.

[FR Doc. 2015–28549 Filed 11–5–15; 11:15 am]

BILLING CODE 8011–01–P

SECURITIES AND EXCHANGE COMMISSION

[Release No. 34–76329; File No. SR–EDGX–2015–51]

Self-Regulatory Organizations; EDGX Exchange, Inc.; Notice of Filing and Immediate Effectiveness of a Proposed Rule Change To Amend Rules 3.22, Proxy Voting, and 13.3, Forwarding of Proxy and Other Issuer Materials

November 3, 2015.

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 (the ''Act''),[1] and Rule 19b–4 thereunder,[2] notice is hereby given that on October 23, 2015, EDGX Exchange, Inc. (the ''Exchange'' or ''EDGX'') filed with the Securities and Exchange Commission (''Commission'') the proposed rule change as described in Items I and II below, which Items have been prepared by the Exchange. The Exchange has designated this proposal as a ''non-controversial'' proposed rule change pursuant to Section 19(b)(3)(A) of the Act[3] and Rule 19b–4(f)(6)(iii) thereunder,[4] which renders it effective upon filing with the Commission. The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

I. Self-Regulatory Organization's Statement of the Terms of Substance of the Proposed Rule Change

The Exchange filed a proposal to restructure and amend Rules 3.22, Proxy Voting, and 13.3, Forwarding or [sic] Proxy and other Issuer Materials, to conform to the rules of BATS Exchange, Inc. (''BZX'') and BATS Y-Exchange, Inc. (''BYX'').[5]

The text of the proposed rule change is available at the Exchange's Web site at *www.batstrading.com,* at the principal office of the Exchange, and at the Commission's Public Reference Room.

II. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

In its filing with the Commission, the Exchange included statements concerning the purpose of and basis for the proposed rule change and discussed any comments it received on the proposed rule change. The text of these statements may be examined at the places specified in Item IV below. The Exchange has prepared summaries, set forth in Sections A, B, and C below, of the most significant parts of such statements.

A. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

1. Purpose

In early 2014, the Exchange and its affiliate, EDGA Exchange, Inc. (''EDGA'') received approval to effect a merger (the ''Merger'') of the Exchange's parent company, Direct Edge Holdings LLC, with BATS Global Markets, Inc., the parent of BZX and the BATS Y-Exchange, Inc. (''BYX'', together with BZX, EDGA and EDGX, the ''BGM Affiliated Exchanges'').[6] In the context of the Merger, the BGM Affiliated Exchanges are working to align their rules, retaining only intended differences between the BGM Affiliated Exchanges.

The Exchange provisions regarding proxy delivery and voting are currently included in two separate rules—Rule 3.22 governing proxy voting, and Rule 13.3 governing the forwarding of proxy and other issuer related materials. Conversely, BZX and BYX rules consolidate their proxy delivery and voting requirements into a single rule, Rule 13.3. Thus, the Exchange proposes to restructure and amend Rules 3.22, Proxy Voting, and 13.3, Forwarding or Proxy and other Issuer Materials, to conform to the corresponding rules of BYX and BZX in order to provide a consistent rule set across each of the BGM Affiliated Exchanges.[7]

In sum, Rule 3.22 limits the circumstances in which a Member may vote a proxy without instructions from beneficial owners while Rule 13.3 requires Members to transmit proxy materials and other communications to beneficial owners of securities. The Exchange notes the provisions of Exchange Rules 3.22 and 13.3 are substantially similar to BYX and BZX Rules 13.3 which also limits the circumstances in which a Member may vote a proxy and requires Members to transmit proxy materials to beneficial owners of securities. Nonetheless, the Exchange proposes to consolidate its proxy rules into a single Rule 13.3 with minor revisions to make the rule identical to the corresponding BYX and BZX Rules 13.3. Each of these revisions are discussed below.

First, the Exchange proposes to number the current text of Rule 13.3 as paragraph (a) with the following modification: Remove reference to Rule 3.22 regarding the definition of ''designated investment adviser'' under Interpretation and Policy .01 as that rule is to be relocated to Rule 13.3 as described below.

Second, the Exchange proposes to relocate Rule 3.22, Proxy Voting, in its entirety to Rule 13.3 as follows:

- Rule 3.22(a) would be renumbered as Rule 13.3(b) with a revision to subsections (ii) and (iii) to include the phrase ''such proxy is given'' in order to mirror BZX and BYX Rules 13.3(b). The rule would continue to prohibit Members from giving a proxy to vote stock that is registered in its name, unless: (i) Such Member is the beneficial owner of such stock; (ii) *such proxy is given* pursuant to the written instructions of the beneficial owner; or (iii) *such proxy is given* pursuant to the rules of any national securities exchange or association of which it is a member provided that the records of the Member clearly indicate the procedure it is following.
- Rule 3.22(b) would be renumbered as Rule 13.3(c) with a revision to replace a reference to ''SEC'' with ''Commission'' in order to mirror BZX and BYX Rules 13.3(c).
- Rule 3.22(c) would be renumbered as Rule 13.3(d) with a revision to replace a reference to ''Rule 13.3'' with paragraph (a) of this Rule as the current text of Rule 13.3 is proposed to be numbered as paragraph (a). As amended, Rule 13.3(d) would mirror BZX and BYX Rules 13.3(d).
- Interpretation and Policies to Rule 3.22 would be relocated in its entirety to Rule 13.3 with no changes.

Other than as described above, the Exchange does not propose any additional changes to the relocated text of Rule 3.22. As amended, Exchange

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[1] 15 U.S.C. 78s(b)(1).

[2] 17 CFR 240.19b–4.

[3] 15 U.S.C. 78s(b)(3)(A).

[4] 17 CFR 240.19b–4(f)(6)(iii).

[5] *See* BYX and BZX Rule 13.3.

[6] *See* Securities Exchange Act Release No. 71449 (January 30, 2014), 79 FR 6961 (February 5, 2014) (SR–EDGX–2013–43; SR–EDGA–2013–34).

[7] The Exchange notes that EDGA intends to file an identical proposal with the Commission to restructure and amend its Rules 3.22. Proxy Voting, and 13.3, Forwarding or Proxy and other Issuer Materials, to conform to BYX and BZX Rules 13.3.

Rule 13.3 would be identical to BYX and BZX Rules 13.3. The Exchange believes that the changes described above will help avoid confusion amongst Members of the Exchange that are also members of EDGA, BYX, and BZX by adopting identical rules across the BGM Affiliated Exchanges with regard to proxy delivery and beneficial owner voting.

2. Statutory Basis

The Exchange believes that the proposed rule changes are consistent with the requirements of the Act and the rules and regulations thereunder that are applicable to a national securities exchange, and, in particular, with the requirements of Section 6(b) of the Act.[8] Specifically, the proposed changes are consistent with Section 6(b)(5) of the Act,[9] because they are designed to promote just and equitable principles of trade, to remove impediments to, and perfect the mechanism of, a free and open market and a national market system, and, in general, to protect investors and the public interest. None of these changes alter the Exchange's current proxy delivery and voting requirements. Rather, as mentioned above, the proposed rule changes, combined with the planned filing for EDGA, would allow the BGM Affiliated Exchanges to provide an identical set of rules as it relates to proxy delivery and voting. Consistent rules, in turn, will simplify the regulatory requirements for Members of the Exchange that are also participants on EDGA, BYZ and/or BZX. The proposed rule change would provide greater harmonization between rules of similar purpose on the BGM Affiliated Exchanges, resulting in greater uniformity and less burdensome and more efficient regulatory compliance and understanding of Exchange Rules. As such, the proposed rule change would foster cooperation and coordination with persons engaged in facilitating transactions in securities and would remove impediments to and perfect the mechanism of a free and open market and a national market system. Similarly, the Exchange also believes that, by harmonizing the rules across each BGM Affiliated Exchange, the proposal will enhance the Exchange's ability to fairly and efficiently regulate its Members, meaning that the proposed rule change would promote just and equitable principles of trade in accordance with Section 6(b)(5) of the Act.[10]. [sic] Finally, the Exchange believes that the non-substantive changes discussed above will contribute to the protection of investors and the public interest by helping to avoid confusion with respect to Exchange Rules.

[8] 15 U.S.C. 78f(b).

[9] 15 U.S.C. 78f(b)(5).

[10] *Id.*

B. Self-Regulatory Organization's Statement on Burden on Competition

The Exchange does not believe that the proposed rule change will impose any burden on competition not necessary or appropriate in furtherance of the purposes of the Act. To the contrary, allowing the Exchange to implement identical rules across each of the BGM Affiliated Exchanges does not present any competitive issues, but rather is designed to provide greater harmonization among Exchange, BZX, BYX, and EDGA rules of similar purpose. The proposed rule change should, therefore, result in less burdensome and more efficient regulatory compliance as well as a better understanding of Exchange Rules for common members of the BGM Affiliated Exchanges.

C. Self-Regulatory Organization's Statement on Comments on the Proposed Rule Change Received From Members, Participants, or Others

The Exchange has neither solicited nor received written comments on the proposed rule change.

III. Date of Effectiveness of the Proposed Rule Change and Timing for Commission Action

Because the foregoing proposed rule change does not: (A) Significantly affect the protection of investors or the public interest; (B) impose any significant burden on competition; and (C) become operative for 30 days from the date on which it was filed, or such shorter time as the Commission may designate, it has become effective pursuant to Section 19(b)(3)(A) of the Act[11] and paragraph (f)(6) of Rule 19b–4 thereunder.[12]

At any time within 60 days of the filing of the proposed rule change, the Commission summarily may temporarily suspend such rule change if it appears to the Commission that such action is: (1) Necessary or appropriate in the public interest; (2) for the protection of investors; or (3) otherwise in furtherance of the purposes of the Act. If the Commission takes such action, the Commission shall institute proceedings to determine whether the proposed rule should be approved or disapproved.

[11] 15 U.S.C. 78s(b)(3)(A).

[12] 17 CFR 240.19b–4(f)(6). As required under Rule 19b–4(f)(6)(iii), the Exchange provided the Commission with written notice of its intent to file the proposed rule change, along with a brief description and the text of the proposed rule change, at least five business days prior to the date of filing of the proposed rule change, or such shorter time as designated by the Commission.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether the proposed rule change is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic Comments

- Use the Commission's Internet comment form (*http://www.sec.gov/rules/sro.shtml*); or
- Send an email to *rule-comments@sec.gov.* Please include File Number SR–EDGX–2015–51 on the subject line.

Paper Comments

- Send paper comments in triplicate to Brent J. Fields, Secretary, Securities and Exchange Commission, 100 F Street NE., Washington, DC 20549–1090.

All submissions should refer to File Number SR–EDGX–2015–51. This file number should be included on the subject line if email is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's Internet Web site (*http://www.sec.gov/rules/sro.shtml*). Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for Web site viewing and printing in the Commission's Public Reference Room, 100 F Street NE., Washington, DC 20549 on official business days between the hours of 10:00 a.m. and 3:00 p.m. Copies of such filing also will be available for inspection and copying at the principal office of the Exchange. All comments received will be posted without change; the Commission does not edit personal identifying information from submissions. You should submit only information that you wish to make available publicly. All submissions should refer to File Number SR–EDGX–2015–51, and should be submitted on or before November 30, 2015.

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.[13]

Brent J. Fields,

Secretary.

[FR Doc. 2015–28400 Filed 11–6–15; 8:45 am]

BILLING CODE 8011–01–P

SECURITIES AND EXCHANGE COMMISSION

[Release No. 34–76331; File No. SR–ICC–2015–017]

Self-Regulatory Organizations; ICE Clear Credit LLC; Notice of Filing of Proposed Rule Change To Revise the ICC Risk Management Framework and ICC Treasury Operations Policies and Procedures, and Adopt the ICC Risk Management Model Description Document

November 3, 2015.

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 (''Act'') [1] and Rule 19b–4 thereunder [2] notice is hereby given that on October 20, 2015, ICE Clear Credit LLC (''ICC'') filed with the Securities and Exchange Commission (''Commission'') the proposed rule change as described in Items I, II, and III below, which Items have been prepared primarily by ICC. The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

I. Self-Regulatory Organization's Statement of the Terms of Substance of the Proposed Rule Change

ICC proposes reorganizing the ICC Risk Management Framework (''RMF'') in response to a recommendation from the Commodity Futures Trading Commission (''CFTC'') regarding improvements related to the governance of ICC's risk management documentation. Specifically, ICC proposes organizational and clarifying edits to the RMF and the Treasury Operations Policies and Procedures, and proposes adopting a new Risk Management Model Description Document. These revisions do not require any changes to the ICC Clearing Rules (''Rules''). Additionally, the edits are not substantive and do not affect the nature of ICC's risk management program.

[13] 17 CFR 200.30–3(a)(12).

[1] 15 U.S.C. 78s(b)(1).

[2] 17 CFR 240.19b–4.

II. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

In its filing with the Commission, ICC included statements concerning the purpose of and basis for the proposed rule change and discussed any comments it received on the proposed rule change. The text of these statements may be examined at the places specified in Item IV below. ICC has prepared summaries, set forth in sections A, B and C below, of the most significant aspects of these statements.

A. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

ICC proposes reorganizing the ICC RMF in response to a CFTC recommendation regarding improvements related to the governance of ICC's risk management documentation. Specifically, ICC proposes organizational and clarifying edits to the RMF and the Treasury Operations Policies and Procedures, and proposes adopting a new Risk Management Model Description Document. ICC believes such revisions will facilitate the prompt and accurate clearance and settlement of securities transactions and derivative agreements, contracts, and transactions for which it is responsible. The proposed revisions are described in detail as follows.

ICC moved the Collateral Assets Risk Management Framework appendix from the RMF to the Treasury Operations Policies and Procedures. Accordingly, references throughout the RMF to the Collateral Assets Risk Management Framework appendix were updated to refer instead to the Treasury Operations Policies and Procedures. ICC moved appendices containing technical risk management information (formerly, RMF Appendices 3–5) to the new ICC Risk Management Model Description Document. Accordingly, references throughout the RMF to these appendices were updated to refer to the Risk Management Model Description Document.

ICC also made general updates and edits throughout the RMF for clarity and consistency. Such edits include correcting verb tenses, adopting consistent abbreviations, and adjusting sentence order to assure logical presentation and word flow, and to use more concise, succinct language. ICC also made additional clarifying edits, as described below. The edits are not substantive and do not affect the nature of ICC's risk management program.

Within the Overview section of the RMF, ICC refined the Business Overview details to more accurately describe the business operations of Intercontinental Exchange, Inc. and ICC.

ICC made edits to the Governance and Organization section of the RMF to more fully describe which topics the Risk Committee is responsible to advise the Board. The list of documents reviewed by the Risk Committee on at least an annual basis was revised to include the ICC Risk Management Model Description Document, the ICC Treasury Operations Policies and Procedures, and the ICC Liquidity Risk Management Framework. The Risk Working Group (''RWG'') description was updated to note that the group consists of risk personnel from ICC Clearing Participants (''CPs''), and to clarify that the RWG is responsible for reviewing ICC's risk philosophy and recommending changes to ICC's RMF. The validation function of the risk philosophy and tolerance was removed from the list of RWG responsibilities, as such functions are the ultimate responsibility of the Board. The Advisory Committee description was updated to note that the committee is comprised of representatives of up to twelve clients/customers of ICC CPs (currently there are twelve client/customer members). The CDS Default Committee description was updated to note that the committee is comprised of representatives from ICC CPs on a rotating basis and to remove reference to a duty to provide feedback on ICC's RMF and parameters because the CDS Default Committee is only convened upon the declaration of a default. The committee description was enhanced to note that, as the CDS Default Committee assists ICC in determining and managing Minimum Target Prices for auctioned portfolios related to a default, the committee oversees necessary auction(s) as well as the process to re-establish a matched book. The Risk Management Organization section was updated to remove outdated language stating that the Risk Management Department conducts an annual review of ICC's Risk Management Framework Policy Statement and submits proposed changes to the RWG, Risk Committee, and Board. Further, the section was updated to remove reference to the Risk Management Department being responsible for ICC's intellectual capital and personnel, while creating, implementing and maintaining ICC's risk management policies.

ICC made edits to the Product Summary section of the RMF. ICC clarified language to refer to Index CDS Instruments (as opposed to Index

Products), Single Name CDS Instruments (as opposed to Single Name CDS), and reference entities (as opposed to companies). The Index CDS instruments section was revised to remove reference to the International Index Company. The Single Name CDS Instruments section was modified to refine language concerning what constitutes a credit event. The list of attributes defining a CDS contract was enhanced to include Maturity, as well as reference Notional Amount, as opposed to Notional Principal. Reference to the terms of the contracts being prescribed by the ICC Rules and Participant Agreement was removed. The Risk Factors, Risk Sub-Factors and Instruments section was revised to enhance the definition of Risk Sub-Factor to refer to a specific single name reference obligation seniority and doc clause combination.

ICC made edits to the Systemic Risk Management Approach section of the RMF, which includes Waterfall Levels 1 through 5. ICC revised Waterfall Level 1: Membership Criteria to remove reference, within the Operational Criteria, to employee participation on industry committees (*e.g.* ISDA, DTCC, etc.). Furthermore, the ongoing monitoring of participants section was enhanced to state: (i) Intraday monitoring includes intraday CDS market levels and potential equity price movements, as well as news from Bloomberg and other information sources; and (ii) daily monitoring and analysis includes prior day's final pays by CP, daily change in Initial Margin (''IM''), margin deficits, unrealized intraday profits/losses for cleared portfolios, risk impact of new intraday trades on cleared portfolios, daily end-of-day (''EOD'') levels, CPs' Guaranty Fund (''GF'') obligations, CPs' day-over-day change in GF requirements relative to each firms prior day levels, and CPs' day-over-day change in GF requirements relative to the total GF balance. ICC has removed from the ongoing monitoring of participants section review of the following components: Daily prices and spreads (including missed EOD submissions), daily EOD prices (including missed prices), prior day's and intraday total IM as a percentage of CP's or CP's guarantor's capital, collateral pricing report for missing prices, and collateral deposits no longer in compliance with ICC's acceptable collateral policy. Such elements are included in the enhanced daily monitoring and analysis section or have been deemed no longer to relevant to the monitoring process. Further, ICC clarified that the Risk Management Department reviews weekly stress test results for extreme risk event scenarios to ensure sufficient margin cover under market conditions, as opposed to drastic market conditions. The Participant Withdrawal subsection was revised to remove reference to ICC's right of One Time Assessment and instead refer more generally to ICC's power of assessment.

ICC revised the Waterfall Level 2: Initial Margin description to clarify that ICC's IM requirements consist of a set of individual components that account for various risks and that the methodology includes consideration of hypothetical scenarios for those components. ICC added language to the Spread Response requirements section to note that the hypothetical prices used in calculating the instrument spread response risk IM requirement reflect the time-to-maturity horizon reduced by one day. ICC revised the distributions and related parameters subsection to refer to the more specific feature Mean Absolute Deviation (''MAD'') as opposed to the more general term ''scale.'' ICC removed reference to a set EWMA decay factor, as the factor is dynamic and subject to review and changes by the Risk Department in consultation with the Risk Committee. ICC also removed outdated language regarding the initial setting of Auto Regressive process for first order parameters.

ICC revised the description of the considered scenarios to provide a mathematical description of how the considered scenarios are constructed based on statistical analysis of historical time series. The term structure scenario construction is now clearly defined in terms of 99% Value-at-Risk equivalent risk measures for different tenors and the cross-tenor correlation structure is estimated from time series analysis. ICC revised the term ''contracting'' to ''tightening'' in the context of spread behavior to provide conformity to more commonly used credit market terminology.

Within the Recovery Rate (''RR'') Sensitivity Requirements subsection, ICC clarified that two additional single name-specific stress-test RRs are considered in determining the requirements.

ICC revised Waterfall Level 3: Mark-to-Market Margin description. Specifically, ICC revised the methodology section to remove specific calculations regarding the methodology and instead refer to the ICC EOD Price Discovery Policies and Procedures, which contain a more fulsome methodology description.

ICC revised Waterfall Level 4: Intra-day Risk Monitoring/Special Margin Call Execution to clarify language describing the calculation of prices to determine the adequacy of collected IM intraday. Specifically, as part of the calculation, ICC utilizes bid-offer quotes which are automatically fed into the ICC risk management intraday monitoring system.

ICC revised Waterfall Level 5: Guaranty Fund description. The ICC GF is designed to provide adequate funds to cover losses associated with the default of the two CPs, as well as any affiliated CPs (*i.e.* any other CP that owns, is owned by, or is under common ownership with such a CP) with the greatest potential uncollateralized losses. ICC added language to note that the set of all affiliated CPs is considered as a CP affiliate group. Within the Waterfall Level 5 description, ICC revised language to reinforce this CP affiliate group concept. Within the Guaranty Fund Calculation for Clearing Participants subsection, ICC removed reference to summary concepts of uncollateralized loss given default, uncollateralized spread response losses, uncollateralized basis risk losses, and uncollateralized interest rate losses, previously used in describing the computations of the stress scenario losses. ICC more precisely defined the factors considered within the GF calculation and related stress test scenarios as the following: Occurrence of multiple credit events, uncollateralized loss-given-default from self-referencing positions, adverse spread scenarios, adverse index-single-name basis widening, adverse interest rate scenarios, and anti procyclicality.

ICC added language to the Guaranty Fund Allocation subsection of the RMF to state that the CP's total uncollateralized GF stress loss is the difference between the sum of the stress loss given default, GF stress spread response, GF stress basis risk and interest rate losses and the sum of the IM idiosyncratic jump-to-default requirements, IM spread response requirement, IM basis and interest risk requirement.

ICC revised the General Wrong Way Risk and Contagion Measures subsection to remove technical information that was moved to the Risk Management Model Description Document.

ICC revised the Position Concentration Limits subsection of the Risk Limits and Controls section to clarify that ICC's concentration charge is designed to increase a CP's IM requirement toward the risk of maximum loss and ultimately, at the extreme, toward the full expected notional amount of liability of the sold protection or the present value of the amount of coupon payments for bought protection. ICC summarized language referring to the notional liability of the protection sold or the full value of coupon payments to refer more generally to loss associated with the portfolio. ICC revised the Model Time Horizon subsection to note that the standard risk horizon can be increased by the ICC Risk Management Department during banking holiday periods to reflect ICC's limited ability to execute margin calls without Risk Committee consultation. ICC further revised the Position Concentration Thresholds subsection to clarify that, if at any point, either the margin requirements or concentration charges grow to be a concern, ICC has the authority to execute special or intraday margin calls, and/or to increase the rate at which the concentration charges grow.

ICC revised the Stress Testing subsection of the Back Testing and Stress Testing section to remove specific assumptions associated with the various stress scenarios used in the daily risk management process. For proprietary reasons, these specific assumptions are now included in ICC's Stress Testing Framework. ICC also clarified that the Risk Management Department presents stress results at the monthly Risk Committee meetings, as well as recommendations about next steps and recommendations to add or retire stress tests.

ICC made edits to the Default Treatment section to remove outdated language stating that ICC seconds traders eligible to serve on the ICE Clear Europe Default Management Committee. ICC removed language regarding the auctioning of multi-currency portfolios for stylistic reasons, as the following sentences provide the information in a more accessible format.

ICC revised the Cash Settlement subsection of the Settlement section to remove outdated language stating that ICC will evaluate a transition to a Central bank model for US cash if available.

ICC made edits to the Market Investment Risk Management section of the RMF. Specifically, ICC deleted redundant language regarding ICC's investment policy that can be found in the ICC Treasury Operations Policies and Procedures.

ICC enhanced the ICC Clearing Participant Risk Management Questionnaire appendix to add more specific details that better capture the intent of the questions contained within.

ICC revised the Overview section of the Clearing Participant Default Management Procedures appendix to refer more generally to ICC's default management procedures, as opposed to offering specific details provided elsewhere within the appendix. ICC also revised the CDS Default Committee subsection to remove language stating that the CDS Default Committee Members are responsible for determining and adjusting minimum target prices for auctions. ICC added language to the Hedging and Liquidation subsection to note that the CDS Default Committee is responsible for assisting ICC with respect to liquidating and hedging positions with the Non-Defaulting CPs, in consultation with the Chief Risk Officer. ICC clarified the Auction Procedures/Competitive Bidding section to state that the auction bidding process will be open for an ICC specified minute window, as opposed to a specific 15-minute window.

ICC removed the Collateral Assets Risk Management Framework Appendix 7 from the RMF and added it as an appendix to the ICC Treasury Operations Policies and Procedures. Accordingly, references within the Treasury Operations Policies and Procedures to the RMF were updated. Additionally, ICC updated its list of banking relationships contained within the document. ICC also made conforming, non-material edits to the document.

Finally, ICC has created the Risk Management Model Description Document, which includes the technical risk information previously included in Appendices 3 to 5 of the RMF as well as information previously included in explanatory risk documents. Technical risk information, previously included in explanatory risk documents, is incorporated consistently throughout the new Risk Management Model Description Document. The inclusion of such information does not constitute a substantive change to the RMF, as it serves to enhance the transparency of the technical details of the current implementation described in the previous RMF. In the Risk Management Model Description Document, ICC provides additional technical information to improve the understanding and/or replication of the models. ICC also provides improved logical connections among all model components, which should contribute to developing a general intuition for ICC's risk approach.

Material changes to the Risk Management Model Description Document will be approved by ICC's Board of Managers and submitted, in the appropriate form to regulators consistent with other documents constituting ICC's RMF. The Risk Management Model Description Document includes a technical description of ICC's Initial Margin methodology (Recovery Rate Sensitivity Risk Analysis; Loss Given Default Risk Analysis; Liquidity Risk Analysis; Large Position Risk Analysis; Jump-To-Default Risk Analysis; Interest Rate Sensitivity Risk Analysis; Basic Risk Analysis; Spread Risk Analysis; Multi-Currency Portfolio Treatment; and Portfolio Loss Boundary Condition) and ICC's Guaranty Fund methodology (Guaranty Fund Size Estimation; Guaranty Fund Requirements and Periodic Adjustments; and General Wrong Way Risk and Contagion Stress Tests). Within the Spread Risk Analysis section, where ICC previously had listed explicit risk factors within the RMF, ICC replaced such explicit risk factors with the underlying formulas used in deriving such factors.

Section 17A(b)(3)(F) of the Act [3] requires, among other things, that the rules of a clearing agency be designed to promote the prompt and accurate clearance and settlement of securities transactions, and to the extent applicable, derivative agreements, contracts and transactions and to comply with the provisions of the Act and the rules and regulations thereunder. ICC believes that the proposed rule changes are consistent with the requirements of the Act and the rules and regulations thereunder applicable to ICC, in particular, to Section 17(A)(b)(3)(F),[4] because ICC believes that the proposed rule changes will promote the prompt and accurate clearance and settlement of securities transactions, derivatives agreements, contracts, and transactions. The revised RMF, the revised Treasury Operations Policies and Procedures, and the Risk Management Model Description Document provide additional clarity regarding ICC's RMF. ICC believes the proposed revisions provide further clarity in terms of ICC's risk management policies and procedures, through the consolidation of technical risk documents into one singular document. ICC believes the revisions to ICC's RMF will continue to ensure proper governance of the RMF. Further, by revising the RMF and the Treasury Operations Policies and Procedures, and establishing the Risk Management Model Description document, ICC is complying with a directive from the CFTC regarding clarity and transparency of its RMF. As such, the proposed rule changes are designed to promote the

[3] 15 U.S.C. 78q–1(b)(3)(F).

[4] *Id.*

prompt and accurate clearance and settlement of securities transactions, derivatives agreements, contracts, and transactions within the meaning of Section 17A(b)(3)(F) of the Act.[5]

B. Self-Regulatory Organization's Statement on Burden on Competition

ICC does not believe the proposed rule changes would have any impact, or impose any burden, on competition. ICC is reorganizing its risk management policies and not making any substantive changes to its overall RMF. Therefore, ICC does not believe the proposed rule changes impose any burden on competition that is inappropriate in furtherance of the purposes of the Act.

C. Self-Regulatory Organization's Statement on Comments on the Proposed Rule Change Received From Members, Participants or Others

Written comments relating to the proposed rule change have not been solicited or received. ICC will notify the Commission of any written comments received by ICC.

III. Date of Effectiveness of the Proposed Rule Change and Timing for Commission Action

Within 45 days of the date of publication of this notice in the **Federal Register** or within such longer period up to 90 days (i) as the Commission may designate if it finds such longer period to be appropriate and publishes its reasons for so finding or (ii) as to which the self-regulatory organization consents, the Commission will:

(A) By order approve or disapprove such proposed rule change, or

(B) institute proceedings to determine whether the proposed rule change should be disapproved.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether the proposed rule change is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic Comments

- Use the Commission's Internet comment form (*http://www.sec.gov/rules/sro.shtml*); or
- Send an email to *rule-comments@sec.gov.* Please include File Number SR–ICC–2015–017 on the subject line.

Paper Comments

- Send paper comments in triplicate to Secretary, Securities and Exchange Commission, 100 F Street NE., Washington, DC 20549–1090.

All submissions should refer to File Number SR–ICC–2015–017. This file number should be included on the subject line if email is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's Internet Web site (*http://www.sec.gov/rules/sro.shtml*). Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for Web site viewing and printing in the Commission's Public Reference Room, 100 F Street NE., Washington, DC 20549, on official business days between the hours of 10:00 a.m. and 3:00 p.m. Copies of such filings will also be available for inspection and copying at the principal office of ICE Clear Credit and on ICE Clear Credit's Web site at *https://www.theice.com/clear-credit/regulation.*

All comments received will be posted without change; the Commission does not edit personal identifying information from submissions. You should submit only information that you wish to make available publicly. All submissions should refer to File Number SR–ICC–2015–017 and should be submitted on or before November 30, 20155.

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.[6]

Brent J. Fields,

Secretary.

[FR Doc. 2015–28402 Filed 11–6–15; 8:45 am]

BILLING CODE 8011–01–P

[5] 15 U.S.C. 78q–1(b)(3)(F).

[6] 17 CFR 200.30–3(a)(12).

SECURITIES AND EXCHANGE COMMISSION

[Release No. 34–76330; File No. SR–EDGA–2015–41]

Self-Regulatory Organizations; EDGA Exchange, Inc.; Notice of Filing and Immediate Effectiveness of a Proposed Rule Change To Amend Rules 3.22, Proxy Voting, and 13.3, Forwarding of Proxy and Other Issuer Materials

November 3, 2015.

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 (the ''Act''),[1] and Rule 19b–4 thereunder,[2] notice is hereby given that on October 23, 2015, EDGA Exchange, Inc. (the ''Exchange'' or ''EDGA'') filed with the Securities and Exchange Commission (''Commission'') the proposed rule change as described in Items I and II below, which Items have been prepared by the Exchange. The Exchange has designated this proposal as a ''non–controversial'' proposed rule change pursuant to Section 19(b)(3)(A) of the Act[3] and Rule 19b–4(f)(6)(iii) thereunder,[4] which renders it effective upon filing with the Commission. The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

I. Self-Regulatory Organization's Statement of the Terms of Substance of the Proposed Rule Change

The Exchange filed a proposal to restructure and amend Rules 3.22, Proxy Voting, and 13.3, Forwarding or [sic] Proxy and other Issuer Materials, to conform to the rules of BATS Exchange, Inc. (''BZX'') and BATS Y-Exchange, Inc. (''BYX'').[5]

The text of the proposed rule change is available at the Exchange's Web site at *www.batstrading.com,* at the principal office of the Exchange, and at the Commission's Public Reference Room.

II. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

In its filing with the Commission, the Exchange included statements concerning the purpose of and basis for the proposed rule change and discussed any comments it received on the proposed rule change. The text of these statements may be examined at the places specified in Item IV below. The

[1] 15 U.S.C. 78s(b)(1).

[2] 17 CFR 240.19b–4.

[3] 15 U.S.C. 78s(b)(3)(A).

[4] 17 CFR 240.19b–4(f)(6)(iii).

[5] *See* BYX and BZX Rule 13.3.

Exchange has prepared summaries, set forth in Sections A, B, and C below, of the most significant parts of such statements.

A. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

1. Purpose

In early 2014, the Exchange and its affiliate, EDGX Exchange, Inc. (''EDGX'') received approval to effect a merger (the ''Merger'') of the Exchange's parent company, Direct Edge Holdings LLC, with BATS Global Markets, Inc., the parent of BZX and the BATS Y-Exchange, Inc. (''BYX'', together with BZX, EDGA and EDGX, the ''BGM Affiliated Exchanges'').[6] In the context of the Merger, the BGM Affiliated Exchanges are working to align their rules, retaining only intended differences between the BGM Affiliated Exchanges.

The Exchange provisions regarding proxy delivery and voting are currently included in two separate rules—Rule 3.22 governing proxy voting, and Rule 13.3 governing the forwarding of proxy and other issuer related materials. Conversely, BZX and BYX rules consolidate their proxy delivery and voting requirements into a single rule, Rule 13.3. Thus, the Exchange proposes to restructure and amend Rules 3.22, Proxy Voting, and 13.3, Forwarding or Proxy and other Issuer Materials, to conform to the corresponding rules of BYX and BZX in order to provide a consistent rule set across each of the BGM Affiliated Exchanges.[7]

In sum, Rule 3.22 limits the circumstances in which a Member may vote a proxy without instructions from beneficial owners while Rule 13.3 requires Members to transmit proxy materials and other communications to beneficial owners of securities. The Exchange notes the provisions of Exchange Rules 3.22 and 13.3 are substantially similar to BYX and BZX Rules 13.3 which also limits the circumstances in which a Member may vote a proxy and requires Members to transmit proxy materials to beneficial owners of securities. Nonetheless, the Exchange proposes to consolidate its proxy rules into a single Rule 13.3 with minor revisions to make the rule identical to the corresponding BYX and BZX Rules 13.3. Each of these revisions are discussed below.

First, the Exchange proposed [sic] to number the current text of Rule 13.3 as paragraph (a) with the following modification: remove reference to Rule 3.22 regarding the definition of ''designated investment adviser'' under Interpretation and Policy .01 as that rule is to be relocated to Rule 13.3 as described below.

Second, the Exchange proposes to relocate Rule 3.22, Proxy Voting, in its entirety to Rule 13.3 as follows:

- Rule 3.22(a) would be renumbered as Rule 13.3(b) with a revision to subsections (ii) and (iii) to include the phrase ''such proxy is given'' in order to mirror BZX and BYX Rules 13.3(b). The rule would continue to prohibit Members from giving a proxy to vote stock that is registered in its name, unless: (i) Such Member is the beneficial owner of such stock; (ii) *such proxy is given* pursuant to the written instructions of the beneficial owner; or (iii) *such proxy is given* pursuant to the rules of any national securities exchange or association of which it is a member provided that the records of the Member clearly indicate the procedure it is following.
- Rule 3.22(b) would be renumbered as Rule 13.3(c) with a revision to replace a reference to ''SEC'' with ''Commission'' in order to mirror BZX and BYX Rules 13.3(c).
- Rule 3.22(c) would be renumbered as Rule 13.3(d) with a revision to replace a reference to ''Rule 13.3'' with paragraph (a) of this Rule as the current text of Rule 13.3 is proposed to be numbered as paragraph (a). As amended, Rule 13.3(d) would mirror BZX and BYX Rules 13.3(d).
- Interpretation and Policies to Rule 3.22 would be relocated in its entirety to Rule 13.3 with no changes.

Other than as described above, the Exchange does not propose any additional changes to the relocated text of Rule 3.22. As amended, Exchange Rule 13.3 would be identical to BYX and BZX Rules 13.3. The Exchange believes that the changes described above will help avoid confusion amongst Members of the Exchange that are also members of EDGX, BYX, and BZX by adopting identical rules across the BGM Affiliated Exchanges with regard to proxy delivery and beneficial owner voting.

2. Statutory Basis

The Exchange believes that the proposed rule changes are consistent with the requirements of the Act and the rules and regulations thereunder that are applicable to a national securities exchange, and, in particular, with the requirements of Section 6(b) of the Act.[8] Specifically, the proposed changes are consistent with Section 6(b)(5) of the Act,[9] because they are designed to promote just and equitable principles of trade, to remove impediments to, and perfect the mechanism of, a free and open market and a national market system, and, in general, to protect investors and the public interest. None of these changes alter the Exchange's current proxy delivery and voting requirements. Rather, as mentioned above, the proposed rule changes, combined with the planned filing for EDGX, would allow the BGM Affiliated Exchanges to provide an identical set of rules as it relates to proxy delivery and voting. Consistent rules, in turn, will simplify the regulatory requirements for Members of the Exchange that are also participants on EDGX, BYZ and/or BZX. The proposed rule change would provide greater harmonization between rules of similar purpose on the BGM Affiliated Exchanges, resulting in greater uniformity and less burdensome and more efficient regulatory compliance and understanding of Exchange Rules. As such, the proposed rule change would foster cooperation and coordination with persons engaged in facilitating transactions in securities and would remove impediments to and perfect the mechanism of a free and open market and a national market system. Similarly, the Exchange also believes that, by harmonizing the rules across each BGM Affiliated Exchange, the proposal will enhance the Exchange's ability to fairly and efficiently regulate its Members, meaning that the proposed rule change would promote just and equitable principles of trade in accordance with Section 6(b)(5) of the Act.[10] Finally, the Exchange believes that the non-substantive changes discussed above will contribute to the protection of investors and the public interest by helping to avoid confusion with respect to Exchange Rules.

B. Self-Regulatory Organization's Statement on Burden on Competition

The Exchange does not believe that the proposed rule change will impose any burden on competition not necessary or appropriate in furtherance of the purposes of the Act. To the contrary, allowing the Exchange to implement identical rules across each of the BGM Affiliated Exchanges does not present any competitive issues, but

[6] *See* Securities Exchange Act Release No. 71449 (January 30, 2014), 79 FR 6961 (February 5, 2014) (SR–EDGX–2013–43; SR–EDGA–2013–34).

[7] The Exchange notes that EDGX intends to file an identical proposal with the Commission to restructure and amend its Rules 3.22. Proxy Voting, and 13.3, Forwarding or Proxy and other Issuer Materials, to conform to BYX and BZX Rules 13.3.

[8] 15 U.S.C. 78f(b).

[9] 15 U.S.C. 78f(b)(5).

[10] *Id.*

rather is designed to provide greater harmonization among Exchange, BZX, BYX, and EDGX rules of similar purpose. The proposed rule change should, therefore, result in less burdensome and more efficient regulatory compliance as well as a better understanding of Exchange Rules for common members of the BGM Affiliated Exchanges.

C. Self-Regulatory Organization's Statement on Comments on the Proposed Rule Change Received From Members, Participants, or Others

The Exchange has neither solicited nor received written comments on the proposed rule change.

III. Date of Effectiveness of the Proposed Rule Change and Timing for Commission Action

Because the foregoing proposed rule change does not: (A) Significantly affect the protection of investors or the public interest; (B) impose any significant burden on competition; and (C) become operative for 30 days from the date on which it was filed, or such shorter time as the Commission may designate, it has become effective pursuant to Section 19(b)(3)(A) of the Act [11] and paragraph (f)(6) of Rule 19b–4 thereunder.[12]

At any time within 60 days of the filing of the proposed rule change, the Commission summarily may temporarily suspend such rule change if it appears to the Commission that such action is: (1) Necessary or appropriate in the public interest; (2) for the protection of investors; or (3) otherwise in furtherance of the purposes of the Act. If the Commission takes such action, the Commission shall institute proceedings to determine whether the proposed rule should be approved or disapproved.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether the proposed rule change is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic Comments

- Use the Commission's Internet comment form (*http://www.sec.gov/rules/sro.shtml*); or
- Send an email to *rule-comments@sec.gov*. Please include File Number SR–EDGA–2015–41 on the subject line.

Paper Comments

- Send paper comments in triplicate to Brent J. Fields, Secretary, Securities and Exchange Commission, 100 F Street NE., Washington, DC 20549–1090.

All submissions should refer to File Number SR–EDGA–2015–41. This file number should be included on the subject line if email is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's Internet Web site (*http://www.sec.gov/rules/sro.shtml*). Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for Web site viewing and printing in the Commission's Public Reference Room, 100 F Street NE., Washington, DC 20549 on official business days between the hours of 10:00 a.m. and 3:00 p.m. Copies of such filing also will be available for inspection and copying at the principal office of the Exchange. All comments received will be posted without change; the Commission does not edit personal identifying information from submissions. You should submit only information that you wish to make available publicly. All submissions should refer to File Number SR–EDGA–2015–41, and should be submitted on or before November 30, 2015.

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.[13]

Brent J. Fields,

Secretary.

[FR Doc. 2015–28401 Filed 11–6–15; 8:45 am]

BILLING CODE 8011–01–P

[11] 15 U.S.C. 78s(b)(3)(A).

[12] 17 CFR 240.19b–4(f)(6). As required under Rule 19b–4(f)(6)(iii), the Exchange provided the Commission with written notice of its intent to file the proposed rule change, along with a brief description and the text of the proposed rule change, at least five business days prior to the date of filing of the proposed rule change, or such shorter time as designated by the Commission.

[13] 17 CFR 200.30–3(a)(12).

SECURITIES AND EXCHANGE COMMISSION

[Release No. 34–76332; File No. SR–ISEGemini-2015–23]

Self-Regulatory Organizations; ISE Gemini, LLC; Notice of Filing of Proposed Rule Change To Comply With the Requirements of Rule 1004 of Regulation SCI

November 3, 2015.

Pursuant to section 19(b)(1) of the Securities Exchange Act of 1934 (the "Act"),[1] and Rule 19b–4 thereunder,[2] notice is hereby given that on October 23, 2015, ISE Gemini, LLC (the "Exchange" or the "ISE Gemini") filed with the Securities and Exchange Commission the proposed rule change as described in Items I, II, and III below, which Items have been prepared by the self-regulatory organization. The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

I. Self-Regulatory Organization's Statement of the Terms of Substance of the Proposed Rule Change

ISE Gemini proposes to designate all members that function as Primary Market Makers ("PMMs") as necessary for the maintenance of a fair and orderly market should business continuity and disaster recovery plans (collectively "DR Plans") be activated, and proposes to require PMMs to participate in scheduled functional and performance testing of the operation of such DR Plans by amending Rule 803, Obligations of Market Makers. The Exchange notes that ISE Rule 1903 v [3] Order Routing to Other Exchanges, which is incorporated by reference into ISE Gemini's rulebook, designates members that function as Linkage Handlers as necessary for the maintenance of a fair and orderly market should DR Plans be activated and requires Linkage Handlers to participate in scheduled functional and performance testing of the operation of such DR Plans. The text of the proposed rule change is available on the Exchange's Web site at *www.ise.com,* at the principal office of the Exchange, and at the Commission's Public Reference Room.

[1] 15 U.S.C. 78s(b)(1).

[2] 17 CFR 240.19b–4.

[3] This rule is being amended by SR–ISE–2015–35 to designate Linkage Handlers as necessary for the maintenance of a fair and orderly market should the Exchange's DR Plans activate, and require Linkage Handlers to participate in scheduled functional and performance testing of the operation of such DR Plans.

II. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

In its filing with the Commission, the self-regulatory organization included statements concerning the purpose of, and basis for, the proposed rule change and discussed any comments it received on the proposed rule change. The text of these statements may be examined at the places specified in Item IV below. The Exchange has prepared summaries, set forth in sections A, B, and C below, of the most significant aspects of such statements.

A. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

1. Purpose

Rule 1004 requires the establishment of standards for the designation of those members the Exchange reasonably determines are, taken as a whole, the minimum necessary for the maintenance of a fair and orderly market should the Exchange's business continuity and disaster recovery plans be activated. Rule 1004 also requires the Exchange to designate members pursuant to those standards and require participation by such members in scheduled functional and performance testing of the operation of such plans, in the manner and frequency specified by the Exchange, provided that such frequency shall not be less than once every 12 months. Therefore, in accordance with Rule 1004, the Exchange proposes to designate all PMMs [4] and Linkage Handlers,[5] as the minimum necessary for the maintenance of a fair and orderly market should the Exchange's DR Plans be activated. This proposed rule also mandates participation by designated members in scheduled functional and performance testing of the operation of such DR Plans.

Background

On November 19, 2014, the Securities and Exchange Commission unanimously voted to adopt Regulation SCI, which is a set of rules designed to strengthen the technology infrastructure of the U.S. securities markets.[6] Specifically, the rules are designed to reduce the occurrence of systems issues, improve resiliency when systems problems do occur, and enhance the Commission's oversight and enforcement of securities market technology infrastructure.[7]

Regulation SCI applies to ''SCI entities,'' a term which includes SROs such as ISE Gemini. Regulation SCI requires SCI entities to, among other things, (1) Establish written policies and procedures reasonably designed to ensure that their systems have levels of capacity, integrity, resiliency, availability, and security adequate to maintain their operational capability; (2) mandate participation by designated members in scheduled testing of the operation of their business continuity and disaster recovery plans, including backup systems, and to coordinate such testing on an industry- or sector-wide basis with other SCI entities; (3) take corrective action with respect to ''SCI events'' (such as systems disruptions, systems compliance issues, and systems intrusions), and to notify the Commission of such events; (4) disseminate information about certain SCI events to affected members and, for certain ''major'' SCI events, to all members; and (5) review their systems by objective, qualified personnel at least annually, to submit quarterly reports regarding completed, ongoing, and planned material changes to their SCI systems to the Commission, and to maintain certain books and records.[8]

Proposed Rule Change

Rule 1004 of Regulation SCI requires the establishment of standards for the designation of those members ISE Gemini reasonably determines are, taken as a whole, the minimum necessary for the maintenance of a fair and orderly market should the Exchange activate its DR Plans. To comply with this rule, the Exchange proposes to amend .02 of Supplementary Material to ISE Gemini Rule 803, Obligations of Market Makers, by designating all members that function as PMMs. The Exchange also notes that .03 of Supplementary Material to ISE Rule 1903, Order Routing to Other Exchanges, has been incorporated by reference into ISE Gemini's rulebook and designates all members that function as Linkage Handlers as necessary for the maintenance of a fair and orderly market should the Exchange activate its DR Plans.[9]

ISE Gemini believes PMMs (together with Linkage Handlers) meet the requirements of Regulation SCI because they are vital to maintaining a fair and orderly market. Among other things, PMMs compete with other market makers [10] to improve the market in all series of options classes to which the PMM is appointed; make markets that are honored for the number of contracts entered into the Exchange's system in all series of options classes to which the PMM is appointed; update market quotations in response to changed market conditions in all series of options classes to which the PMM is appointed; and price option contracts fairly.[11] If the DR Plans are activated, PMMs will ensure ISE Gemini's market continues to run smoothly. Similarly, Linkage Handlers meet the requirements of Regulation SCI because they route orders to other exchanges when ISE Gemini is not at the National Best Bid or Offer (''NBBO''). Should the DR Plans be activated, Linkage Handlers will ensure that investors receive the best price available across all exchanges for their orders.

Rule 1004 also requires that the Exchange mandate participation by designated members in scheduled functional and performance testing of the operation of such plans, in the manner and frequency specified by the Exchange, provided that such frequency shall not be less than once every 12 months. The Exchange now proposes that PMMs and Linkage Handlers (requirements incorporated by reference) are required to participate in scheduled functional and performance testing of such plans at least once every 12 months. This testing will prepare the designated members for certain SCI events, and enable the market to continue operating without major issues during such events.

2. Statutory Basis

The Exchange believes that the proposed rule change is consistent with the requirements of the Act, and the

[4] A PMM posts two-sided continuous quotations in all of the options classes to which it is appointed and undertakes special responsibilities for maintaining fair and orderly markets. PMM memberships are represented by PMM Trading Rights. The options classes trading on ISE Gemini are divided into groups or ''bins'', each with one PMM. One PMM member may, however, represent more than one bin.

[5] A Linkage Handler is a broker that is unaffiliated with the Exchange with which the Exchange has contracted with to provide routing services, by routing certain orders, to other exchanges as agent in connection with the Options Order Protection and Locked/Crossed Market Plan. *See* .03 to Supplementary Material to ISE Rule 1901.

[6] *See* Securities Exchange Act Release No. 73639 (November 19, 2014), 79 FR 72252 (December 5, 2014) (''SCI Adopting Release'').

[7] Division of Trading and Markets, Responses to Frequently Asked Questions Concerning Regulation SCI at *https://www.sec.gov/divisions/marketreg/regulation-sci-faq.shtml.*

[8] *Id.*

[9] The Exchange notes that these designations are determined by the members' respective functions.

[10] Market makers refers to ''Competitive Market Makers'' and ''PMMs'' collectively. *See* ISE Gemini Rule 100(a)(25).

[11] *See* ISE Gemini Rule 803.

rules and regulations thereunder that are applicable to a national securities exchange, and, in particular, with the requirements of section 6(b) of the Act.[12] In particular, the proposal is consistent with section 6(b)(5) of the Act,[13] because it is designed to promote just and equitable principles of trade, remove impediments to and perfect the mechanisms of a free and open market and a national market system and, in general, to protect investors and the public interest.

The Exchange believes the proposed rule is consistent with the Exchange Act because it complies with Regulation SCI's requirements. ISE Gemini's Rule 803, and ISE Rule 1903, which is incorporated by reference, designate members they determine are necessary for the maintenance of a fair and orderly market if the Exchange's DR Plans are activated and mandate participation by designated members in scheduled functional and performance testing of the DR Plans at least once every 12 months.

The Exchange further believes the proposed rule change is consistent with the protection of investors and the public interest because ISE Gemini has designated PMMs, which maintain a fair and orderly market by making markets that are honored, competing with other market makers to improve the market, updating market quotations, and pricing option contracts fairly. Similarly, ISE Gemini has incorporated by reference the designation of Linkage Handlers, which route certain orders to other exchanges when ISE Gemini is not at the NBBO. This provides investors with the best price available across exchanges for their orders. Further, the proposed rule is consistent with the protection of investors and the public interest because, as proposed and incorporated by reference, these designated members are required to participate in functional and performance testing of the DR Plans. As a result, if the DR Plans are activated, the designated members and their systems will be prepared to handle a potential SCI event and ensure that investors can continue to trade during the event.

B. Self-Regulatory Organization's Statement on Burden on Competition

This proposed rule change does not impose any burden on competition that is not necessary or appropriate in furtherance of the purposes of the Exchange Act because ISE Gemini is implementing the requirements of Regulation SCI.

C. Self-Regulatory Organization's Statement on Comments on the Proposed Rule Change Received From Members, Participants or Others

The Exchange has neither solicited nor received written comments on this proposed rule change. The Exchange has not received any written comments from members or other interested parties.

III. Date of Effectiveness of the Proposed Rule Change and Timing for Commission Action

Because the foregoing proposed rule change does not significantly affect the protection of investors or the public interest, does not impose any significant burden on competition, and, by its terms, does not become operative for 30 days from the date on which it was filed, or such shorter time as the Commission may designate, it has become effective pursuant to section 19(b)(3)(A) of the Act[14] and Rule 19b–4(f)(6) thereunder.[15] The Exchange provided the Commission with written notice of its intent to file the proposed rule change, along with a brief description and text of the proposed rule change, at least five business days prior to the date of filing the proposed rule change, or such shorter time as designated by the Commission, as required by Rule 19b–4(f)(6).

At any time within 60 days of the filing of such proposed rule change, the Commission summarily may temporarily suspend such rule change if it appears to the Commission that such action is necessary or appropriate in the public interest, for the protection of investors, or otherwise in furtherance of the purposes of the Act. If the Commission takes such action, the Commission shall institute proceedings to determine whether the proposed rule should be approved or disapproved.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether the proposed rule change is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic Comments

- Use the Commission's Internet comment form *http://www.sec.gov/rules/sro.shtml*); or
- Send an Email to *rule-comments@sec.gov*. Please include File No. SR–ISEGemini–2015–23 on the subject line.

Paper Comments

- Send paper comments in triplicate to Brent J. Fields, Secretary, Securities and Exchange Commission, 100 F Street NE., Washington, DC 20549–1090.

All submissions should refer to File Number SR–ISEGemini–2015–23. This file number should be included on the subject line if email is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commissions Internet Web site (*http://www.sec.gov/rules/sro.shtml*). Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for Web site viewing and printing in the Commission's Public Reference Room. Copies of such filing also will be available for inspection and copying at the principal office of ISE Gemini. All comments received will be posted without change; the Commission does not edit personal identifying information from submissions. You should submit only information that you wish to make available publicly. All submissions should refer to File Number SR–ISEGemini–2015–23 and should be submitted by November 30, 2015.

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.[16]

Brent J. Fields,

Secretary.

[FR Doc. 2015–28403 Filed 11–6–15; 8:45 am]

BILLING CODE 8011–01–P

SMALL BUSINESS ADMINISTRATION

[Disaster Declaration #14530 and #14531]

Virginia Disaster #VA–00058

AGENCY: U.S. Small Business Administration.

ACTION: Notice.

SUMMARY: This is a notice of an Administrative declaration of a disaster for the Commonwealth of VIRGINIA dated 11/02/2015.

Incident: Severe Storms and Flooding.

Incident Period: 09/29/2015 through 10/03/2015.

[12] 15 U.S.C. 78f(b).

[13] 15 U.S.C. 78f(b)(5).

[14] 15 U.S.C. 78s(b)(3)(A).

[15] 17 CFR 240.19b–4(f)(6).

[16] 17 CFR 200.30–3(a)(12).

DATES: *Effective Date*: 11/02/2015.

Physical Loan Application Deadline Date: 01/04/2016.

Economic Injury (EIDL) Loan Application Deadline Date: 08/02/2016.

ADDRESSES: Submit completed loan applications to: U.S. Small Business Administration, Processing and Disbursement Center, 14925 Kingsport Road, Fort Worth, TX 76155.

FOR FURTHER INFORMATION CONTACT: A. Escobar, Office of Disaster Assistance, U.S. Small Business Administration, 409 3rd Street SW., Suite 6050, Washington, DC 20416

SUPPLEMENTARY INFORMATION: Notice is hereby given that as a result of the Administrator's disaster declaration, applications for disaster loans may be filed at the address listed above or other locally announced locations.

The following areas have been determined to be adversely affected by the disaster:

Primary Counties: Floyd

Contiguous Counties:

Virginia: Carroll, Franklin, Montgomery, Patrick, Pulaski, Roanoke.

The Interest Rates Are:

	Percent
For Physical Damage:	
Homeowners With Credit Available Elsewhere	3.750
Homeowners Without Credit Available Elsewhere	1.875
Businesses With Credit Available Elsewhere	6.000
Businesses Without Credit Available Elsewhere	4.000
Non-Profit Organizations With Credit Available Elsewhere	2.625
Non-Profit Organizations Without Credit Available Elsewhere	2.625
For Economic Injury:	
Businesses & Small Agricultural Cooperatives Without Credit Available Elsewhere	4.000
Non-Profit Organizations Without Credit Available Elsewhere	2.625

The number assigned to this disaster for physical damage is 14530 6 and for economic injury is 14531 0

The State which received an EIDL Declaration # is Virginia

(Catalog of Federal Domestic Assistance Numbers 59008)

Dated: November 2, 2015.

Maria Contreras-Sweet,

Administrator.

[FR Doc. 2015–28463 Filed 11–6–15; 8:45 am]

BILLING CODE 8025–01–P

SMALL BUSINESS ADMINISTRATION

[Disaster Declaration #14503 and #14504]

Washington Disaster Number WA–00060

AGENCY: U.S. Small Business Administration.

ACTION: Amendment 1.

SUMMARY: This is an amendment of the Presidential declaration of a major disaster for Public Assistance Only for the State of Washington (FEMA–4242–DR), dated 10/15/2015.

Incident: Severe Windstorm.

Incident Period: 08/29/2015.

DATES: *Effective Date*: 10/29/2015.

Physical Loan Application Deadline Date: 12/14/2015.

Economic Injury (EIDL) Loan Application Deadline Date: 07/15/2016.

ADDRESSES: Submit completed loan applications to: U.S. Small Business Administration, Processing and Disbursement Center, 14925 Kingsport Road, Fort Worth, TX 76155.

FOR FURTHER INFORMATION CONTACT: A. Escobar, Office of Disaster Assistance, U.S. Small Business Administration, 409 3rd Street SW., Suite 6050, Washington, DC 20416.

SUPPLEMENTARY INFORMATION: The notice of the President's major disaster declaration for Private Non-Profit organizations in the State of WASHINGTON, dated 10/15/2015, is hereby amended to include the following areas as adversely affected by the disaster.

Primary Counties: Clallam, Grays Harbor, Whatcom.

All other information in the original declaration remains unchanged.

(Catalog of Federal Domestic Assistance Numbers 59002 and 59008)

James E. Rivera,

Associate Administrator, for Disaster Assistance.

[FR Doc. 2015–28462 Filed 11–6–15; 8:45 am]

BILLING CODE 8025–01–P

DEPARTMENT OF STATE

[Public Notice: 9341]

Advisory Committee on Private International Law: Public Meeting on Online Dispute Resolution

The Office of the Assistant Legal Adviser for Private International Law, Department of State, hereby gives notice that the Advisory Committee on Private International Law (ACPIL) Online Dispute Resolution (ODR) Study Group will hold a public meeting. The ACPIL ODR Study Group will meet to discuss the next session of the UNCITRAL Online Dispute Resolution (ODR) Working Group, scheduled for November 30 to December 4 in Vienna. This is not a meeting of the full Advisory Committee.

At the July 2015 plenary session of UNCITRAL, the ODR Working Group was instructed ''to continue its work towards elaborating a non-binding descriptive document reflecting elements of an ODR process, on which elements the Working Group had previously reached consensus, excluding the question of the final stage of the ODR process (arbitration/non-arbitration).'' Report of the United National Commission on International Trade Law, 48th Session (29 June–16 July 2015), A/70/17, para. 352. The documents for the upcoming session of the Working Group will be available on the following link: *http://www.uncitral.org/uncitral/commission/working_groups/3Online_Dispute_Resolution.html.* The reports for the earlier sessions of the Working Group are available on the same link.

Time and Place: The meeting of the ACPIL ODR Study Group will take place on Friday November 20 from 11 a.m. to 1 p.m. EDT at 2430 E Street NW., South Building (SA 4S) (Navy Hill), Room 240. Participants should arrive at Navy Hill before 9:45 a.m. for visitor screening. Participants will be met at the Navy Hill gate at 23rd and D Streets NW., and will be escorted to the South Building. Persons arriving later will need to make arrangements for entry using the contact information provided below. If you are unable to attend the public meeting and would like to participate from a remote location, teleconferencing will be available.

Public Participation: This meeting is open to the public, subject to the capacity of the meeting room. Access to the building is strictly controlled. For pre-clearance purposes, those planning to attend should email *pil@state.gov* providing full name, address, date of birth, citizenship, driver's license or passport number, and email address. This information will greatly facilitate entry into the building. A member of the public needing reasonable accommodation should email *pil@state.gov* not later than May 5, 2015. Requests made after that date will be considered, but might not be able to be fulfilled. If you would like to participate by telephone, please email *pil@state.gov* to obtain the call-in number and other information.

Data from the public is requested pursuant to Public Law 99–399 (Omnibus Diplomatic Security and Antiterrorism Act of 1986), as amended; Public Law 107–56 (USA PATRIOT Act); and Executive Order 13356. The purpose of the collection is to validate the identity of individuals who enter Department facilities.

The data will be entered into the Visitor Access Control System (VACS–D) database. Please see the Security Records System of Records Notice (State-36) at *https://foia.state.gov/_docs/SORN/State-36.pdf* for additional information.

Dated: November 2, 2015.

Michael J. Dennis,

Attorney-Adviser, Office of Private International Law, Office of the Legal Adviser, U.S. Department of State.

[FR Doc. 2015–28446 Filed 11–6–15; 8:45 am]

BILLING CODE 4710–08–P

DEPARTMENT OF STATE

[Public Notice: 9340]

60-Day Notice of Proposed Information Collection: Affidavit of Identifying Witness

AGENCY: State Department.

ACTION: Notice of request for public comments.

SUMMARY: The Department of State is seeking Office of Management and Budget (OMB) approval for the information collection described below. In accordance with the Paperwork Reduction Act of 1995, we are requesting comments on this collection from all interested individuals and organizations. The purpose of this notice is to allow 60 days for public comment preceding submission of the collection to OMB.

DATE(S): The Department will accept comments from the public up to January 8, 2016.

ADDRESSES: You may submit comments by any of the following methods:

• *Web:* Persons with access to the Internet may comment on this notice by going to *www.Regulations.gov.* You can search for the document by entering ''Docket Number: DOS–2015–0065'' in the Search field. Then click the ''Comment Now'' button and complete the comment form.

• *Email: PPTFormsOfficer@state.gov.*

You must include the DS form number (if applicable), information collection title, and the OMB control number in any correspondence.

FOR FURTHER INFORMATION CONTACT: Direct requests for additional information regarding the collection listed in this notice, including requests for copies of the proposed information collection and supporting documents, by mail to PPT Forms Officer, U.S. Department of State, CA/PPT/S/L/LA 44132 Mercure Cir., P.O. Box 1227 Sterling, VA 20166–1227, by phone at (202) 485–6373, or by email at *PPTFormsOfficer@state.gov.*

SUPPLEMENTARY INFORMATION:

• *Title of Information Collection:* Affidavit of Identifying Witness.

• *OMB Control Number:* 1405–0088.

• *Type of Request:* Revision of a Currently Approved Collection.

• *Originating Office:* Bureau of Consular Affairs, Passport Services, Office of Legl Affairs and Law Enforcement Liaison (CA/PPT/S/L/LA).

• *Form Number:* DS–0071.

• *Respondents:* Individuals.

• *Estimated Number of Respondents:* 61,000 affiants per year.

• *Estimated Number of Responses:* 61,000 affiants per year.

• *Average Hours per Response:* 5 min.

• *Total Estimated Burden:* 5,083 hours.

• *Frequency:* On Occasion.

• *Obligation to Respond:* Required to Obtain a Benefit.

We are soliciting public comments to permit the Department to:

• Evaluate whether the proposed information collection is necessary for the proper performance of our functions.

• Evaluate the accuracy of our estimate of the burden of the proposed collection, including the validity of the methodology and assumptions used.

• Enhance the quality, utility, and clarity of the information to be collected.

• Minimize the reporting burden on those who are to respond, including the use of automated collection techniques or other forms of technology.

Please note that comments submitted in response to this Notice are public record. Before including any detailed personal information, you should be aware that your comments as submitted, including your personal information, will be available for public review.

Abstract of proposed collection: The Affidavit of Identifying Witness is submitted in conjunction with an application for a U.S. passport. It is used by Passport Services to collect information for the purpose of establishing the identity of the applicant. This affidavit is completed by the identifying witness when the applicant is unable to establish his or her identity to the satisfaction of a person authorized to accept passport applications.

Methodology: The Affidavit of Identifying Witness is submitted in conjunction with an application for a U.S. passport. Due to legislative mandates, Form DS–0071 is only available at acceptance facilities, passport agencies, and U.S. embassies and consulates. This form must be completed and signed in the presence of an authorized Passport Agent, Acceptance Agent, or Consular Officer.

Dated: November 2, 2015.

Brenda S. Sprague,

Deputy Assistant Secretary for Passport Services, Bureau of Consular Affairs, Department of State.

[FR Doc. 2015–28445 Filed 11–6–15; 8:45 am]

BILLING CODE 4710–06–P

SUSQUEHANNA RIVER BASIN COMMISSION

Commission Meeting

AGENCY: Susquehanna River Basin Commission.

ACTION: Notice.

SUMMARY: The Susquehanna River Basin Commission will hold its regular business meeting on December 4, 2015, in Harrisburg, Pennsylvania. Details concerning the matters to be addressed at the business meeting are contained in the Supplementary Information section of this notice.

DATES: The meeting will be held on Friday, December 4, 2015, at 9 a.m.

ADDRESSES: The meeting will be held at the North Office Building, Hearing Room 1 (Ground Level), located at North Street (at Commonwealth Avenue), Harrisburg, PA 17120.

FOR FURTHER INFORMATION CONTACT: Jason E. Oyler, General Counsel, telephone: (717) 238–0423, ext. 1312; fax: (717) 238–2436.

SUPPLEMENTARY INFORMATION: The business meeting will include actions or presentations on the following items: (1) Resolution concerning FY–2017 federal funding of the Susquehanna Flood Forecast and Warning System and Groundwater and Streamflow Information Program; (2) rulemaking action to amend Commission regulations to simplify and clarify the process for transferring approvals and to add sections pertaining to general permits and minor modifications to approvals; (3) an update to the Commission's Investment Policy Statement; (4) regulatory compliance matters for Seneca Resources Corporation and Schreiber Foods, Inc.; and (5) Regulatory Program projects. The business meeting will also include action on ratification/approval of an agreement.

Projects and rulemaking listed for Commission action are those that were the subject of a public hearing conducted by the Commission on October 29, 2015, and identified in the notices for such hearing, which were published in 80 FR 58806, September 30, 2015; and 80 FR 56936, September 21, 2015, respectively.

The public is invited to attend the Commission's business meeting. Comments on the Regulatory Program projects and rulemaking are subject to a deadline of November 9, 2015. Written comments pertaining to other items on the agenda at the business meeting may be mailed to the Susquehanna River Basin Commission, 4423 North Front Street, Harrisburg, Pennsylvania 17110–1788, or submitted electronically through *http://www.srbc.net/pubinfo/publicparticipation.htm.* Such comments are due to the Commission on or before November 25, 2015. Comments will not be accepted at the business meeting noticed herein.

Authority: Pub. L. 91–575, 84 Stat. 1509 *et seq.,* 18 CFR parts 806, 807, and 808.

Dated: November 4, 2015.

Stephanie L. Richardson,

Secretary to the Commission.

[FR Doc. 2015–28414 Filed 11–6–15; 8:45 am]

BILLING CODE 7040–01–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Membership in the National Parks Overflights Advisory Group Aviation Rulemaking Committee

AGENCY: Federal Aviation Administration, Transportation.

ACTION: Notice.

SUMMARY: By **Federal Register** notice (See 80 FR 58808–58809, September 30, 2015) the National Park Service (NPS) and the Federal Aviation Administration (FAA) invited interested persons to apply to fill one upcoming opening to represent Native American interests on the National Parks Overflights Advisory Group (NPOAG) Aviation Rulemaking Committee (ARC). This notice informs the public of the persons selected to fill this current vacancy as the membership term expired on October 9, 2015.

FOR FURTHER INFORMATION CONTACT: Keith Lusk, Special Programs Staff, Federal Aviation Administration, Western-Pacific Region Headquarters, P.O. Box 92007, Los Angeles, CA 90009–2007, telephone: (310) 725–3808, email: *Keith.Lusk@faa.gov.*

SUPPLEMENTARY INFORMATION:

Background

The National Parks Air Tour Management Act of 2000 (the Act) was enacted on April 5, 2000, as Public Law 106–181, and subsequently amended in the FAA Modernization and Reform Act of 2012. The Act required the establishment of the advisory group within 1 year after its enactment. The NPOAG was established in March 2001. The advisory group is comprised of a balanced group of representatives of general aviation, commercial air tour operations, environmental concerns, and Native American tribes. The Administrator of the FAA and the Director of NPS (or their designees) serve as ex officio members of the group. Representatives of the Administrator and Director serve alternating 1-year terms as chairman of the advisory group.

In accordance with the Act, the advisory group provides ''advice, information, and recommendations'' to the Administrator and the Director—

(1) On the implementation of this title [the Act] and the amendments made by this title;

(2) On commonly accepted quiet aircraft technology for use in commercial air tour operations over a national park or tribal lands, which will receive preferential treatment in a given air tour management plan;

(3) On other measures that might be taken to accommodate the interests of visitors to national parks; and

(4) At the request of the Administrator and the Director, safety, environmental, and other issues related to commercial air tour operations over a national park or tribal lands.''

Membership

The current NPOAG ARC is made up of one member representing general aviation, three members representing the commercial air tour industry, four members representing environmental concerns, and two members representing Native American interests. Current members of the NPOAG ARC are as follows:

Melissa Rudinger representing general aviation; Alan Stephen, Matt Zuccaro, and Mark Francis representing commercial air tour operators; Michael Sutton, Nicholas Miller, Mark Belles, and Dick Hingson representing environmental interests; and Leigh Kuwanwisiwma representing Native American tribes with one seat open.

Selection

The person selected to fill the open seat representing Native American interests is Martin Begaye. Mr. Begaye's 3-year term will begin on the day of the **Federal Register** notice publication.

Issued in Hawthorne, CA, on November 4, 2015.

Keith Lusk,

Program Manager, Special Programs Staff, Western-Pacific Region.

[FR Doc. 2015–28489 Filed 11–6–15; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[Docket Number FRA–2015–0114]

Petition for Waiver of Compliance

In accordance with part 211 of Title 49 of Code of Federal Regulations (CFR), this document provides the public notice that by a document dated September 29, 2015, the Graham-White Company (Graham-White) has petitioned the Federal Railroad Administration (FRA) for a waiver of compliance from certain provisions of the Federal railroad safety regulations contained at 49 CFR 231.27. FRA assigned the petition Docket Number FRA–2015–0114.

Graham-White manufactures electric locomotive parking brakes. The Graham White design provides transmission of torque from the hand wheel into the input shaft of the brake through a key that engages the hand wheel hub and the input shaft. Title 49 CFR 231.27(a)(2) requires the hand brake wheel be affixed to the input shaft using a square taper fit not less than seven-eighths of an inch square. A Graham-White technical analysis report demonstrates that the company's design provides the same degree of safety or a greater degree of safety than that specified in 49 CFR 231.27. Graham-White is requesting relief from the hand brake shaft square taper fit regulation, as stipulated in 49 CFR 231 Plate A, to allow the key and shaft design currently in service on Graham-White electric parking hand brakes.

A copy of the petition, as well as any written communications concerning the petition, is available for review online at *www.regulations.gov* and in person at the U.S. Department of Transportation's (DOT) Docket Operations Facility, 1200 New Jersey Avenue SE., W12–140, Washington, DC 20590. The Docket Operations Facility is open from 9 a.m. to 5 p.m., Monday through Friday, except Federal Holidays.

Interested parties are invited to participate in these proceedings by submitting written views, data, or comments. FRA does not anticipate scheduling a public hearing in connection with these proceedings since the facts do not appear to warrant a hearing. If any interested party desires an opportunity for oral comment, they should notify FRA, in writing, before the end of the comment period and specify the basis for their request.

All communications concerning these proceedings should identify the appropriate docket number and may be submitted by any of the following methods:

• *Web site: http:// www.regulations.gov.* Follow the online instructions for submitting comments.

• *Fax:* 202–493–2251.

• *Mail:* Docket Operations Facility, U.S. Department of Transportation, 1200 New Jersey Avenue SE., W12–140, Washington, DC 20590.

• *Hand Delivery:* 1200 New Jersey Avenue SE., Room W12–140, Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal Holidays.

Communications received by December 24, 2015 will be considered by FRA before final action is taken. Comments received after that date will be considered as far as practicable.

Anyone is able to search the electronic form of any written communications and comments received into any of our dockets by the name of the individual submitting the comment (or signing the document, if submitted on behalf of an association, business, labor union, etc.). In accordance with 5 U.S.C. 553(c), DOT solicits comments from the public to better inform its processes. DOT posts these comments, without edit, including any personal information the commenter provides, to *www.regulations.gov,* as described in the system of records notice (DOT/ALL—14 FDMS), which can be reviewed at *www.dot.gov/privacy.* See also *http://www.regulations.gov/#!privacyNotice* for the privacy notice of regulations.gov.

Issued in Washington, DC, on November 3, 2015.

Ron Hynes,

Director, Office of Technical Oversight.

[FR Doc. 2015–28363 Filed 11–6–15; 8:45 am]

BILLING CODE 4910–06–P

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[Docket Number FRA–2015–0116]

Petition for Modification of Special Approval for Designation of Repair Locations

In accordance with part 232 of Title 49 Code of Federal Regulations (CFR), this document provides the public notice that by a document dated June 3, 2015, BNSF Railway Company (BNSF) has petitioned the Federal Railroad Administration (FRA) for a modification to its plan designating locations where brake system repairs will be performed, as prescribed in 49 CFR 232.17(b). FRA assigned the petition Docket Number FRA–2015–0116.

BNSF stated that to appropriately handle freight cars with air brake systems or components that became defective en route, BNSF created and currently maintains a list of specific locations across its system that are defined as the ‘‘nearest location where the needed repairs can be effectuated’’ per 49 CFR 232.15(f). The list was last updated several years ago, and, due to changes in accessibility, infrastructure, staffing, and safety, BNSF has proposed modest changes to the current list of locations.

A copy of the petition, as well as any written communications concerning the petition, is available for review online at *www.regulations.gov* and in person at the U.S. Department of Transportation's (DOT) Docket Operations Facility, 1200 New Jersey Avenue SE., W12–140, Washington, DC 20590. The Docket Operations Facility is open from 9 a.m. to 5 p.m., Monday through Friday, except Federal Holidays.

Interested parties are invited to participate in these proceedings by submitting written views, data, or comments. If any interested party desires an opportunity for oral comment, they should notify FRA, in writing, before the end of the comment period and specify the basis for their request.

While 49 CFR 232.17(f) specifies that comments should be submitted to FRA's Associate Administrator for Railroad Safety and Chief Safety Officer, and that a copy of the comment be served on each petitioner, this regulation predates the establishment of the Federal government's public regulatory Web site and the existing electronic petition and comment submittal options.

All communications concerning these proceedings should identify the appropriate docket number and may be submitted by any of the following methods:

• *Web site: http:// www.regulations.gov.* Follow the online instructions for submitting comments.

• *Fax:* 202–493–2251.

• *Mail:* Docket Operations Facility, U.S. Department of Transportation, 1200 New Jersey Avenue SE., W12–140, Washington, DC 20590.

• *Hand Delivery:* 1200 New Jersey Avenue SE., Room W12–140, Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal Holidays.

Communications received by December 9, 2015 will be considered by FRA before final action is taken. Pursuant to 49 CFR 232.17(g), if no comment objecting to the requested modification is received during the 30-day comment period, and if FRA finds that the petition complies with the requirements of 49 CFR 232.17 and that the proposed plan under 49 CFR 232.15(g) is acceptable and justified, the petition will be granted. If granted, the petition will become effective by February 8, 2016.

Anyone is able to search the electronic form of any written communications and comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). In accordance with 5 U.S.C. 553(c), DOT solicits comments from the public to better inform its processes. DOT posts these comments, without edit, including any personal information the commenter provides, to *www.regulations.gov,* as described in the system of records notice (DOT/ALL–14 FDMS), which can be reviewed at *www.dot.gov/privacy.* See also *http:// www.regulations.gov/#!privacyNotice* for the privacy notice of regulations.gov.

Issued in Washington, DC, on Monday, October 26, 2015.

Ron Hynes,

Director, Office of Technical Oversight.

[FR Doc. 2015–28364 Filed 11–6–15; 8:45 am]

BILLING CODE 4910–06–P

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[Safety Advisory No. 2015–05]

Addressing Rail Head Surface Conditions Identified During the Internal Rail Inspection Process

AGENCY: Federal Railroad Administration (FRA), Department of Transportation.

ACTION: Notice of safety advisory.

SUMMARY: On February 16, 2015, a derailment occurred in West Virginia due to a broken rail that resulted from an internal rail defect, specifically a vertical split head (VSH). Although rail flaw detection equipment had indicated rail flaw conditions at the location of the failure in December 2014 and January 2015, the operator of the equipment failed to carry out an on-ground examination of the defect. The operator later claimed that he believed the reading on the monitor was a false-positive due to rail head surface conditions. FRA believes that if the operator better understood the indications for various rail flaw conditions, including the rough rail surface conditions he was to look for and properly identified the rail flaw indications, the operator would have reported the defect to the track owner. Upon reporting, the track owner would have been alerted to its duty under the Track Safety Standards (49 CFR part 213) to take remedial action (either repair or replacement of the rail or reduction of the maximum authorized train speed over the rail to the specified level). Had the track owner then taken proper remedial action, that action may have prevented the broken rail and the derailment.

In response, FRA is issuing this Safety Advisory No. 2015–05 to remind track owners (typically railroads), their track maintenance personnel, and their rail flaw detection equipment operators of the importance of complying with their rail management programs and engineering procedures that address rail with rail head surface conditions while performing rail flaw inspections and track inspections generally. This is particularly vital on track carrying passengers and hazardous materials due to the catastrophic consequences that may result from a derailment. This Safety Advisory also contains recommendations to track owners to ensure their rail flaw detection equipment operators are properly trained and exercise due diligence when a rail head surface condition interferes with a valid rail inspection.

FOR FURTHER INFORMATION CONTACT: Carlo M. Patrick, Staff Director, Rail and Infrastructure Integrity Division, Office of Railroad Safety, FRA, 1200 New Jersey Avenue SE., Washington, DC 20590, telephone (202) 493–6399; or John Seguin, Trial Attorney, Office of Chief Counsel, FRA, 1200 New Jersey Avenue SE., Washington, DC 20590, telephone (202) 493–6045.

SUPPLEMENTARY INFORMATION:

Background, Including Accident Summary and Regulatory Context

The overall safety of railroad operations has improved in recent years. However, a February 2015 accident highlights the need for additional focus on detection of internal rail flaws by each track owner responsible for compliance with the Track Safety Standards, and its respective employees and internal rail inspection service providers, particularly on track that carries passengers or hazardous materials. *See* relevant sections of the regulations, for example, 49 CFR 213.5, *Responsibility for compliance;* 213.113, *Defective rails;* 213.237, *Inspection of rail;* and 213.238, *Qualified operator.* The following section summarizes the circumstances of this train derailment based on FRA's internal investigation and findings to date.

Accident Summary

At 1:15 p.m., Eastern Standard Time, on Monday, February 16, 2015, CSX Transportation, Inc. (CSXT) Train K08014, a loaded unit train transporting Bakken crude oil, traveling eastward at 33 miles per hour (mph) on the railroad's Huntington Division, New River Subdivision, experienced an automated emergency brake application in Fayette County, west of Mt. Carbon, WV, as a result of a derailment. The derailment occurred on Class 4 track due to a VSH rail defect. *See* 49 CFR 213.09. Twenty-seven tank cars derailed, and 20 of the derailed tank cars released approximately 362,300 gallons of crude oil that immediately ignited. The resulting fire burned for four days, requiring an evacuation approximately 1,100 residents within a half-mile of the accident site. One occupant of a house located adjacent to the accident site reported an injury due to smoke inhalation, and a resident outside the evacuation zone was also injured (hypothermia due to a lack of heat from power loss). A small amount of the crude oil entered the Kanawha River. As a precaution, officials closed downstream water treatment intakes at Montgomery, WV, approximately three miles west of the accident site. A one-half-mile evacuation zone around the derailment site affected approximately 1,100 residents

Prior Rail Inspections

As part of its derailment investigation, FRA reviewed the rail test data from CSXT's two most recent rail inspections in the area where the derailment occurred. The two most recent inspections occurred on December 17, 2014, and January 12, 2015, and were conducted by a CSXT contractor, a rail inspection provider. Those inspections included ultrasonic and induction equipment specially designed for the detection of internal rail flaws.

During the December 17, 2014, inspection, the rail inspection provider's test equipment recorded indications with an icon on the display screen showing a vertical ultrasonic channel equipment response and induction test-channel responses at the point of derailment (POD). The test equipment recorded a similar but more significant indication at the same location during the next test on January 12, 2015. During both inspections, the test equipment also responded to a potential longitudinal-type rail head condition with multiple ''boxed'' equipment responses. The rail inspection data produced during the two inspections exhibited equipment responses typically indicating the presence of a significant rail head surface anomaly or longitudinal rail head defect such as the VSH defect that would become the POD on February 16, 2015.

Despite the indications of a defect that was becoming more significant over time, the rail flaw detection equipment operator did not conduct a visual ground examination and/or hand test to meet the 49 CFR 213.113(b) requirement to verify the multiple VSH defect indications the test equipment identified. Instead, the rail inspection operator told FRA that he looked out the window of his test equipment, decided a ''dirty rail'' [1] had caused each indication.

VSH Rail Defect

A VSH rail defect is a progressive longitudinal fracture in the head of the rail (*i.e.,* the upper part of a rail, used for supporting and guiding the wheels of railroad cars), where separation along an internal seam, segregation, or inclusion propagates vertically through the rail head. The formation of a VSH defect is found predominantly in locations where the train wheel stress loads are off center on the rail head. Separation progresses longitudinally and vertically along the rail length, typically for some distance before turning to the gage or field side of the rail head and often progresses rapidly before failure. FRA's investigation

[1] During the interview of the operator, he used the term ''dirty rail''. In this context, FRA believes the operator was referring to a rail that exhibits a top of rail surface condition that could account for the inspection equipment response. However, FRA notes that the term can also mean that the rail contained an internal metallurgical impurity that is inherent from the manufacturing process.

confirmed there was evidence of multiple, centrally located VSH defects at the derailment site.

Use of Rail Flaw Detection Equipment

The railroad industry primarily uses ultrasonic test equipment to conduct non-destructive testing (NDT) for internal rail flaw inspection. As with any NDT method, ultrasonic technology contains physical limitations that allow certain types of rail head surface conditions to influence the proper transfer of sound into the rail and impede detection of rail flaws. The predominant types of these mechanically-formed conditions are referred to as shells, engine-driver burns, spalling, flaking, corrugation, and head checking. Other conditions that are encountered are heavy lubrication or debris on the rail head. Indeed, track owners and rail inspection providers should be aware that the NDT system is designed to perform optimally on an ideal test surface (*i.e.,* no rail head surface conditions). Conditions such as extreme cyclical loading can result in head wear and rail head surface conditions that affect the integrity of these rail flaw inspections.

Any type of surface condition can impede the transfer of sound from a rail inspection transducer into the rail being tested and the proper transfer of sound from a reflector in the rail back to the transducer. If the rail flaw detection equipment operator has any doubt or uncertainty about the integrity of the test process because of surface conditions, the operator should record the rail section searched as an invalid search for internal defects, and the track owner must take appropriate action under paragraph (h) of 49 CFR 213.237. Briefly summarized, paragraph (h) requires the track owner to conduct a valid search, reduce operating speed to a maximum of 25 mph until a valid search can be made, or replace the rail that had not been inspected.

General Responsibilities of Rail Flaw Detection Equipment Operators

The rail flaw detection equipment operator must have the knowledge and experience to proficiently identify the types of rail head surface conditions that can result in an improper or invalid test of the rail section where the condition is located. *See* 49 CFR 213.237(i). Unless a rail flaw detection equipment operator has already demonstrated proficiency operating the equipment before January 24, 2014, and, therefore, satisfied the qualified operator requirement under 49 CFR 213.238(f),[2] FRA requires them to be specifically trained and have written authorization from his or her employer to: (1) Conduct a valid search for internal rail defects that is continuous and completely covers both rails of the track; (2) determine that the rail inspection equipment is operating within manufacturer guidelines and settings and performing all its required functions as designed; and (3) conduct the inspection according to established track owner and regulatory procedures and guidelines, including determining that all equipment responses are interpreted and attributed to a known condition that is not considered a rail defect. 49 CFR 213.238. Indeed, it is essential that the rail inspection's test integrity not be influenced by surface contamination, rail condition, or environmental conditions that can result in changes to the operational settings of the test equipment beyond allowable tolerances, changes to the equipment's alignment, or diminished equipment responses. Therefore, it is imperative that the track owner or rail inspection provider perform a hand test or visual on-ground examination of these suspect conditions to verify whether a defect is present.

FRA regulations specify that the rail flaw detection equipment operator must be trained as specified in FRA regulations to interpret the test data and to ''demonstrate proficiency in the rail defect detection process . . . .'' 49 CFR 213.238(c). Test equipment includes all hand-test instrumentation, recording instrumentation, front-end devices (roller search units, skids, induction search units, cabling, etc.), and detection control center (processing computer) equipment.

Under paragraph (a) of 49 CFR 213.238, each provider of rail flaw detection services shall (1) have a documented training program in place and (2) identify the types of rail flaw detection equipment for which each equipment operator it employs has received training and is qualified. Operators who are deemed a qualified operator under paragraph (f) remain subject to paragraph (d), which, in part, requires an employer to ''reevaluate the qualifications of, and administer any necessary recurrent training for, the operator as determined by and in accordance with the employer's documented program.'' This requirement for recurrent training applies to operators who have completed the initial training program and operators who have been deemed qualified operators under paragraph (f).

FRA determined during its investigation into the February 16, 2015, derailment that the presence of the rail head surface condition was not sufficient to account for the equipment response in its entirety, and that the rail flaw detection equipment operator should have inspected further. FRA believes that a visual ground examination, or hand test, or both, would have identified the presence of the underlying VSH defect at the time of the test on January 12, 2015, at what would become the POD.

Recommended Action: In light of the discussion above, and to instill a heightened sense of vigilance in track owners and their rail inspection provider(s), FRA recommends that each track owner:

1. Review with its employees and its rail inspection provider(s) the circumstances of the derailment described above and ensure its employees and rail inspection provider(s) carefully scrutinize occurrences of localized areas containing rail head surface conditions that may impede detection of an internal rail flaw and result in an invalid inspection;

2. Ensure its rail inspection procedures contain specific instructions that make clear what its rail inspection provider(s) are responsible for (for example, including identifying and reporting defects and invalid searches) and that incentivizes its rail inspection provider(s) to identify and report areas where a valid search could not be conducted;

3. Ensure that its employees and its rail inspection provider(s) follow the requirements of its own engineering instructions and ensure that the employees and rail inspection provider(s) can identify locations that exhibit excessive rail head wear and rail head surface conditions;

4. Ensure that its rail flaw detection equipment operators perform an on-ground examination of any suspect rail defect location in conformance with 49 CFR 213.113(b). The operators should verify the suspect locations by hand as necessary, using a hand-held ultrasonic instrument or comparable device;

5. Ensure that its rail flaw detection equipment operators have been adequately trained on its procedures, are fully capable of performing proficient inspections, and are fully capable of determining whether a rail inspection is valid;

6. Continue the research and development of technology that will permit real-time comparison of the inspection data from the most current rail inspection with inspection data from the previous rail inspection to enable the operator to identify rail conditions that have significantly changed between inspections;

7. Review its current engineering instructions to ensure that the procedures are consistent with the industry standard for rail replacement and repair, particularly in track

[2] The operator of the rail flaw detector equipment that performed the December 17, 2014, and January 12, 2015 internal rail inspections was deemed a qualified operator under 49 CFR 213.238(f).

over which passengers or large quantities of ethanol, crude oil, or other hazardous materials are transported;

8. In applying appropriate slow orders, focus on locations that exhibit rail head surface conditions and rail head wear loss approaching the limits specified in its own engineering instructions until the rail is replaced or repaired; and

9. Aggressively monitor and evaluate its rail inspection provider's or providers' performance through a quality control program.

FRA encourages railroad industry members and other track owners to take actions consistent with the preceding recommendations and to take other complementary actions to help ensure the safety of the Nation's railroads, its employees, and the general public. FRA may modify this Safety Advisory No. 2015–05, issue additional safety advisories, or take other appropriate actions it deems necessary to ensure the highest level of safety on the Nation's railroads, including pursuing other corrective measures under its rail safety authority.

Issued in Washington, DC, on November 4, 2015.

Robert C. Lauby,

Associate Administrator for Railroad Safety Chief Safety Officer.

[FR Doc. 2015–28411 Filed 11–6–15; 8:45 am]

BILLING CODE 4910–06–P

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[Docket Number FRA–2015–0084]

Petition for Waiver of Compliance

In accordance with part 211 of Title 49 Code of Federal Regulations (CFR), this document provides the public notice that by a document dated July 6, 2015, the Southeastern Pennsylvania Transportation Authority (SEPTA) has petitioned the Federal Railroad Administration (FRA) for a waiver of compliance from several provisions of the Federal railroad safety regulations contained at 49 CFR part 240, Qualification and Certification of Locomotive Engineers, and Part 242, Qualification and Certification of Conductors. FRA assigned the petition Docket Number FRA–2015–0084. The relief is contingent on SEPTA's implementation of and participation in the Confidential Close Call Reporting System (C3RS) pilot project.

SEPTA seeks to shield reporting employees and the railroad from mandatory punitive sanctions that would otherwise arise as provided in 49 CFR 240.117(e)(1)–(4); 240.305(a)(l)–(4) and (a)(6); 240.307; 242.403(b), (c), (e)(l)–(4), (e)(6)–(11), and (f)(l)–(2); and 242.407. The C3RS pilot project encourages certified operating crew members to report close calls and protect the employees and the railroad from discipline or sanctions arising from incidents reported per the C3RS Implementing Memorandum of Understanding.

A copy of the petition, as well as any written communications concerning the petition, is available for review online at *www.regulations.gov* and in person at the U.S. Department of Transportation's (DOT) Docket Operations Facility, 1200 New Jersey Avenue SE., W12–140, Washington, DC 20590. The Docket Operations Facility is open from 9 a.m. to 5 p.m., Monday through Friday, except Federal Holidays.

Interested parties are invited to participate in these proceedings by submitting written views, data, or comments. FRA does not anticipate scheduling a public hearing in connection with these proceedings since the facts do not appear to warrant a hearing. If any interested party desires an opportunity for oral comment, they should notify FRA, in writing, before the end of the comment period and specify the basis for their request.

All communications concerning these proceedings should identify the appropriate docket number and may be submitted by any of the following methods:

- *Web site: http://www.regulations.gov.* Follow the online instructions for submitting comments.
- *Fax:* 202–493–2251.
- *Mail:* Docket Operations Facility, U.S. Department of Transportation, 1200 New Jersey Avenue SE., W12–140, Washington, DC 20590.
- *Hand Delivery:* 1200 New Jersey Avenue SE., Room W12–140, Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal Holidays.

Communications received by December 24, 2015 will be considered by FRA before final action is taken. Comments received after that date will be considered as far as practicable.

Anyone is able to search the electronic form of any written communications and comments received into any of our dockets by the name of the individual submitting the comment (or signing the document, if submitted on behalf of an association, business, labor union, etc.). In accordance with 5 U.S.C. 553(c), DOT solicits comments from the public to better inform its processes. DOT posts these comments, without edit, including any personal information the commenter provides, to *www.regulations.gov,* as described in the system of records notice (DOT/ALL–14 FDMS), which can be reviewed at *www.dot.gov/privacy.* See also *http://www.regulations.gov/#!privacyNotice* for the privacy notice of regulations.gov.

Issued in Washington, DC, on Monday, October 26, 2015.

Ron Hynes,

Director, Office of Technical Oversight.

[FR Doc. 2015–28362 Filed 11–6–15; 8:45 am]

BILLING CODE 4910–06–P

DEPARTMENT OF TRANSPORTATION

Maritime Administration

U.S. Merchant Marine Academy Board of Visitors Meeting

AGENCY: Maritime Administration, DOT.

ACTION: Meeting notice.

SUMMARY: Under the provisions of the Federal Advisory Committee Act of 1972 (5 U.S.C., Appendix, as amended), the Government in Sunshine Act of 1976 (5 U.S.C. 552b, as amended) and 41 CFR part 102–3.150, the U.S. Department of Transportation, Maritime Administration (MARAD) announces that a U.S. Merchant Marine Academy (''Academy'') Board of Visitors (BOV) meeting will take place as follows:

1. *Date:* November 20, 2015.
2. *Time:* 10:00 a.m.
3. *Location:* U.S. Merchant Marine Academy, 300 Steamboat Road, Great Neck, NY 11024. Room to be determined.
4. *Purpose of the Meeting:* The purpose of this meeting is to discuss Academy reaccreditation and the status of the five year plan.
5. *Public Access to the Meeting:* Pursuant to the Federal Advisory Committee Act (5 U.S.C. 552b and 41 CFR parts 102–3.140 through 102–3.165) and the availability of space, this meeting is open to the public. Seating is on a first-come basis. Members of the public wishing to attend the meeting will need to show photo identification in order to gain access to the meeting location.

FOR FURTHER INFORMATION CONTACT: The BOV's Designated Federal Officer or Brian Blower at (202) 366–2765 or via email at *Brian.Blower@dot.gov.*

SUPPLEMENTARY INFORMATION: Any member of the public is permitted to file a written statement with the Academy BOV. Written statements should be sent to the Designated Federal Officer at: Brian Blower; 1200 New Jersey Ave. SE., W28–313, Washington, DC 20590 or via email at *Brian.Blower@Dot.gov.* (Please contact the Designated Federal Officer for information on submitting comments via fax.) Written statements must be received no later than three working days prior to the next meeting in order to provide time for member consideration. By rule, no member of the public attending open meetings will be allowed to present questions from the floor or speak to any issue under consideration by the BOV.

(Authority: 46 U.S.C. 51312; 5 U.S.C. app. 552b; 41 CFR parts 102–3.140 through 102–3.165)

Dated: November 4, 2015.

By Order of the Maritime Administrator.

T. Mitchell Hudson, Jr.,

Secretary, Maritime Administration.

[FR Doc. 2015–28442 Filed 11–6–15; 8:45 am]

BILLING CODE 4910–81–P

DEPARTMENT OF THE TREASURY

Internal Revenue Service

Advisory Group to the Commissioner of Internal Revenue; Renewal of Charter

AGENCY: Internal Revenue Service (IRS), Treasury.

ACTION: Notice.

SUMMARY: The Charter for the Internal Revenue Service Advisory Council (IRSAC), has been renewed for a two-year period beginning October 28, 2015.

FOR FURTHER INFORMATION CONTACT: Ms. Lorenza Wilds, National Public Liaison, at *publicliasion@irs.gov.*

SUPPLEMENTARY INFORMATION: Notice is hereby given under section 10(a)(2) of the Federal Advisory Committee Act, 5 U.S.C. App. (1988), and with the approval of the Secretary of the Treasury to announce the renewal of the Internal Revenue Service Advisory Council (IRSAC). The primary purpose of the advisory council is to provide an organized public forum for Internal Revenue Service officials and representatives of the public to discuss relevant tax administration issues. As an advisory body designed to focus on broad policy matters, the IRSAC reviews existing tax policy and/or makes recommendations with respect to emerging federal tax administration issues. The IRSAC suggests operational improvements, offers constructive observations regarding current or proposed IRS policies, programs, and procedures, and suggest improvements with respect to issues having substantive effect on federal tax administration. Conveying the public's perception of IRS activities to Internal Revenue Service officials, the IRSAC is comprised of individuals who bring substantial, disparate experience and diverse backgrounds. Membership is balanced to include representation from the taxpaying public, the tax professional community, small and large business, international, wage and investment taxpayers, academia, and the applicant's knowledge of Circular 230.

Dated: October 28, 2015.

Candice Cromling,

Director, National Public Liaison.

[FR Doc. 2015–28371 Filed 11–6–15; 8:45 am]

BILLING CODE 4830–01–P

FEDERAL REGISTER

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Part II

Department of Energy

10 CFR Parts 429 and 430

Energy Conservation Program: Test Procedures for Central Air Conditioners and Heat Pumps; Proposed Rule

DEPARTMENT OF ENERGY

10 CFR Parts 429 and 430

[Docket No. EERE–2009–BT–TP–0004]

RIN 1904–AB94

Energy Conservation Program: Test Procedures for Central Air Conditioners and Heat Pumps

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Supplemental notice of proposed rulemaking.

SUMMARY: The U.S. Department of Energy (DOE) proposes to revise its test procedures for central air conditioners and heat pumps established under the Energy Policy and Conservation Act. DOE proposed amendments to the test procedure in a June 2010 notice of proposed rulemaking (NOPR), an April 2011 supplemental notice of proposed rulemaking (SNOPR), and an October 2011 SNOPR. DOE provided additional time for stakeholder comment in a December 2011 extension of the comment period for the October 2011 SNOPR. DOE received further public comment for revising the test procedure in a November 2014 Request for Information for energy conservation standards for central air conditioners and heat pumps. DOE proposes in this SNOPR: A new basic model definition as it pertains to central air conditioners and heat pumps and revised rating requirements; revised alternative efficiency determination methods; termination of active waivers and interim waivers; revised procedures to determine off mode power consumption; changes to the test procedure that would improve test repeatability and reduce test burden; clarifications to ambiguous sections of the test procedure intended also to improve test repeatability; inclusion of, amendments to, and withdrawals of test procedure revisions proposed in published test procedure notices in the rulemaking effort leading to this supplemental notice of proposed rulemaking; and changes to the test procedure that would improve field representativeness. Some of these proposals also include incorporation by reference of updated industry standards. DOE welcomes comments from the public on any subject within the scope of this test procedure rulemaking.

DATES: DOE will accept comments, data, and information regarding this supplemental notice of proposed rulemaking (SNOPR) no later than December 9, 2015. See section V, ''Public Participation,'' for details.

ADDRESSES: Any comments submitted must identify the SNOPR for test procedures for central air conditioners and heat pumps, and provide docket number EE–2009–BT–TP–0004 and/or regulatory information number (RIN) number 1904–AB94. Comments may be submitted using any of the following methods:

1. *Federal eRulemaking Portal: www.regulations.gov*. Follow the instructions for submitting comments.
2. *Email: RCAC-HP-2009-TP-0004@ee.doe.gov*. Include the docket number EE–2009–BT–TP–0004 and/or 1904–AB94 RIN in the subject line of the message.
3. *Mail:* Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Office, Mailstop EE–2J, 1000 Independence Avenue SW., Washington, DC 20585–0121. If possible, please submit all items on a CD, in which case it is not necessary to include printed copies.
4. *Hand Delivery/Courier:* Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Office, 950 L'Enfant Plaza SW., Suite 600, Washington, DC 20024.

Telephone: (202) 586–2945. If possible, please submit all items on a CD, in which case it is not necessary to include printed copies.

For detailed instructions on submitting comments and additional information on the rulemaking process, see section V of this document (Public Participation).

Docket: The docket, which includes **Federal Register** notices, public meeting attendee lists and transcripts, comments, and other supporting documents/materials, is available for review at *www.regulations.gov*. All documents in the docket are listed in the regulations.gov index. However, some documents listed in the index, such as those containing information that is exempt from public disclosure, may not be publicly available.

A link to the docket Web page can be found at: *www1.eere.energy.gov/buildings/appliance_standards/rulemaking.aspx/ruleid/72*. This Web page will contain a link to the docket for this notice on the *www.regulations.gov* site. The *www.regulations.gov* Web page will contain simple instructions on how to access all documents, including public comments, in the docket. See section V for information on how to submit comments through regulations.gov.

FOR FURTHER INFORMATION CONTACT:

Ashley Armstrong, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Program, EE–2J, 1000 Independence Avenue SW., Washington, DC 20585–0121. Telephone: (202) 586–6590. Email: *Ashley.Armstrong@ee.doe.gov*.

Johanna Hariharan, U.S. Department of Energy, Office of the General Counsel, GC–33, 1000 Independence Avenue SW., Washington, DC, 20585–0121. Telephone: (202) 287–6307. Email: *Johanna.Hariharan@hq.doe.gov*.

For further information on how to submit a comment, review other public comments and the docket, or participate in the public meeting, contact Ms. Brenda Edwards at (202) 586–2945 or by email: *Brenda.Edwards@ee.doe.gov*.

SUPPLEMENTARY INFORMATION: DOE intends to incorporate by reference the following industry standards into Part 430:

(1) ANSI/AHRI 210/240–2008 with Addenda 1 and 2: Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment, 2012;

(2) AHRI 210/240-Draft: Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment;

(3) ANSI/AHRI 1230–2010 with Addendum 2: Performance Rating of Variable Refrigerant Flow (VRF) Multi-Split Air-Conditioning and Heat Pump Equipment, 2010;

(4) ASHRAE 23.1–2010: Methods of Testing for Rating the Performance of Positive Displacement Refrigerant Compressors and Condensing Units that Operate at Subcritical Temperatures of the Refrigerant;

(5) ASHRAE Standard 37–2009, Methods of Testing for Rating Electrically Driven Unitary Air-Conditioning and Heat Pump Equipment;

(6) ASHRAE 41.1–2013: Standard Method for Temperature Measurement; ASHRAE 41.6–2014: Standard Method for Humidity Measurement;

(7) ASHRAE 41.9–2011: Standard Methods for Volatile-Refrigerant Mass Flow Measurements Using Calorimeters;

(8) ASHRAE/AMCA 51–07/210–07, Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating.

Copies of ANSI/AHRI 210/240–2008 and ANSI/AHRI 1230–2010 can be obtained from the Air-Conditioning, Heating, and Refrigeration Institute, 2111 Wilson Boulevard, Suite 500, Arlington, VA 22201, USA, 703–524–8800, or by going to *http://www.ahrinet.org/site/686/Standards/HVACR-Industry-Standards/Search-Standards*. A copy of AHRI 210/240-

Draft is available on the rulemaking Web page (Docket EERE–2009–BT–TP–0004–0045).

Copies of ASHRAE 23.1–2010, ASHRAE Standard 37–2009, ASHRAE 41.1–2013, and ASHRAE 41.9–2011 can be purchased from ASHRAE's Web site at *https://www.ashrae.org/resources-publications*.

Copies of ASHRAE/AMCA 51–07/210–07 can be purchases from AMCA's Web site at *http://www.amca.org/store/index.php*.

Table of Contents

I. Authority and Background

A. Authority

Title III, Part B of the Energy Policy and Conservation Act of 1975 (EPCA or the Act), Pub. L. 94–163 (42 U.S.C. 6291 – 6309, as codified), established the Energy Conservation Program for Consumer Products Other Than Automobiles, a program covering most major household appliances, including the single phase central air conditioners and heat pumps [1] with rated cooling capacities less than 65,000 British thermal units per hour (Btu/h) that are the focus of this notice.[2] (42 U.S.C. 6291(1)–(2), (21) and 6292(a)(3))

Under EPCA, the program consists of four activities: (1) Testing; (2) labeling; (3) Federal energy conservation standards; and (4) certification, compliance, and enforcement. The testing requirements consist of test procedures that manufacturers of covered products must use as the basis for certifying to DOE that their products comply with applicable energy conservation standards adopted pursuant to EPCA and for representing the efficiency of those products. (42 U.S.C. 6293(c); 42 U.S.C. 6295(s)) Similarly, DOE must use these test procedures in any enforcement action to determine whether covered products comply with these energy conservation standards. (42 U.S.C. 6295(s)) Under 42 U.S.C. 6293, EPCA sets forth criteria and procedures for DOE's adoption and amendment of such test procedures. Specifically, EPCA provides that an amended test procedure shall produce results which measure the energy

[1] Where this notice uses the terms ''HVAC'' or ''CAC/CHP'', they are in reference specifically to central air conditioners and heat pumps as covered by EPCA.

[2] For editorial reasons, upon codification in the U.S. Code, Part B was re-designated Part A.

efficiency, energy use, or estimated annual operating cost of a covered product over an average or representative period of use, and shall not be unduly burdensome to conduct. (42 U.S.C. 6293(b)(3)) In addition, if DOE determines that a test procedure amendment is warranted, it must publish proposed test procedures and offer the public an opportunity to present oral and written comments on them. (42 U.S.C. 6293(b)(2)) Furthermore, DOE must review test procedures at least once every 7 years. (42 U.S.C 6293(b)(1)(A)) DOE last published a test procedure final rule for central air conditioner and heat pumps on October 22, 2007. 72 FR 59906. Finally, in any rulemaking to amend a test procedure, DOE must determine whether and the extent to which the proposed test procedure would change the measured efficiency of a system that was tested under the existing test procedure. (42 U.S.C. 6293(e)(1)) If DOE determines that the amended test procedure would alter the measured efficiency of a covered product, DOE must amend the applicable energy conservation standard accordingly. (42 U.S.C. 6293(e)(2))

DOE's existing test procedures for central air conditioners and heat pumps adopted pursuant to these provisions appear under Title 10 of the Code of Federal Regulations (CFR) Part 430, Subpart B, Appendix M (''Uniform Test Method for Measuring the Energy Consumption of Central Air Conditioners and Heat Pumps''). These procedures establish the currently permitted means for determining energy efficiency and annual energy consumption of these products. Some amendments proposed in this SNOPR will not alter the measured efficiency of central air conditioners and heat pumps, and thus are being proposed as revisions to the current Appendix M. Other amendments proposed in this SNOPR will alter the measured efficiency, as represented in the regulating metrics of energy efficiency ratio (EER), seasonal energy efficiency ratio (SEER), and heating seasonal performance factor (HSPF). These amendments are proposed as part of a new Appendix M1. The test procedure changes proposed in this notice as part of a new Appendix M1, if adopted, would not become mandatory until the existing energy conservation standards are revised. (42 U.S.C. 6293(e)(2)) In revising the energy conservation standards, DOE would create a cross-walk from the existing standards under the current test procedure to what the standards would be if tested using the revised test procedure. DOE would then use the cross-walked equivalent of the existing standard as the baseline for its standards analysis to prevent back-sliding as required under 42 U.S.C. 6295(o)(1).

On December 19, 2007, the President signed the Energy Independence and Security Act of 2007 (EISA 2007), Pub. L. 110–140, which contains numerous amendments to EPCA. Section 310 of EISA 2007 established that the Department's test procedures for all covered products must account for standby mode and off mode energy consumption. (42 U.S.C. 6295(gg)(2)(A)) For central air conditioners and heat pumps, standby mode is incorporated into the SEER metric, while off mode power consumption is separately regulated. This SNOPR includes proposals relevant to the determination of both SEER (including standby mode) and off mode power consumption.

10 CFR 430.27 allows manufacturers to submit an application for an interim waiver and/r a petition for a waiver granting relief from adhering to the test procedure requirements found under 10 CFR part 430, subpart B, Appendix M. For those waivers that are active, however, 10 CFR 430.27(l) requires DOE to amend its regulations so as to eliminate any need for the continuation of such waivers. To this end, this notice proposes relevant amendments to its test procedure concerning such waivers.

B. Background

This SNOPR addresses proposals and comments from three separate rulemakings, two guidance documents, and a working group: (1) Proposals for off mode test procedures made in earlier notices as part of this rulemaking (Docket No. EERE–2009–BT–TP–0004); (2) proposals regarding alternative efficiency determination methods (Docket No. EERE–2011–BT–TP–0024); (3) stakeholder comments from a request for information regarding energy conservation standards (Docket No. EERE–2014–BT–STD–0048); (4) a draft guidance document related to testing and rating split systems with blower coil units (Docket No. EERE–2014–BT–GUID–0033); (5) a draft guidance document that deals with selecting units for testing, rating, and certifying split-system combinations, including discussion of basic models and of condensing units and evaporator coils sold separately for replacement installation (Docket No. EERE–2014–BT–GUID–0032); and (6) the recommendations of the regional standards enforcement Working Group (Docket No. EERE–2011–BT–CE–0077).

DOE's initial proposals for estimating off mode power consumption in the test procedure for central air conditioners and heat pumps were shared with the public in a notice of proposed rulemaking published in the **Federal Register** on June 2, 2010 (June 2010 NOPR; 75 FR 31224) and at a public meeting at DOE headquarters in Washington, DC on June 11, 2010. Subsequently, DOE published a supplemental notice of proposed rulemaking (SNOPR) on April 1, 2011, in response to comments received on the June 2010 NOPR and due to the results of additional laboratory testing conducted by DOE. (April 2011 SNOPR) 76 FR 18105, 18127. DOE received additional comments in response to the April 2011 SNOPR and proposed an amended version of the off mode procedure that addressed those comments in a second SNOPR on October 24, 2011 (October 2011 SNOPR). 76 FR 65616. DOE received additional comments during the comment period of the October 24, 2011 SNOPR and the subsequent extended comment period. 76 FR 79135.

Between the April 2011 and October 2011 SNOPRs, DOE published a direct final rule (DFR) in the **Federal Register** on June 27, 2011 that set forth amended energy conservation standards for central air conditioners and central air conditioning heat pumps, including a new standard for off mode electrical power consumption. (June 2011 DFR) 76 FR 37408. Units manufactured on or after January 1, 2015, are subject to that standard for off mode electrical power consumption. 10 CFR 430.32(c)(6). However, on July 8, 2014, DOE published an enforcement policy statement regarding off mode standards for central air conditioners and central air conditioning heat pumps [3] (July 2014 Enforcement Policy Statement) specifying that DOE will not assert civil penalty authority for violation of the off mode standard until 180 days following publication of a final rule establishing a test method for measuring off mode electrical power consumption.

DOE also pursued, in a request for information (RFI) published on April 18, 2011 (AEDM RFI) (76 FR 21673), and a NOPR published on May 31, 2012 (AEDM NOPR) (77 FR 32038), revisions to its existing alternative efficiency determination methods (AEDM) and alternative rating methods (ARM) requirements to improve the approach by which manufacturers may use

[3] Available at: *http://energy.gov/sites/prod/files/2014/07/f17/Enforcement%20Policy%20Statement%20-%20cac%20off%20mode.pdf* (Last accessed March 30, 2015.)

modeling techniques as the basis to certify consumer products and commercial and industrial equipment covered under EPCA. DOE also published a final rule regarding AEDM requirements for commercial and industrial equipment only (Commercial Equipment AEDM FR). 78 FR 79579. This SNOPR addresses the proposals made and comments received in the AEDM NOPR applicable to central air conditioners and heat pumps and makes additional proposals.

On June 13, 2014, DOE published a notice of intent to form a working group to negotiate enforcement of regional standards for central air conditioners and requested nominations from parties interested in serving as members of the Working Group. 79 FR 33870. On July 16, 2014, the Department published a notice of membership announcing the eighteen nominations that were selected to serve as members of the Working Group, in addition to two members from Appliance Standards and Rulemaking Federal Advisory Committee (ASRAC), and one DOE representative. 79 FR 41456. The Working Group identified a number of issues related to testing and certification that are being addressed in this rule. In addition, all nongovernmental participants of the Working Group approved the final report contingent on upon the issuance of the final guidance on Docket No. EERE–2014–BT–GUID–0032 0032 and Docket No. EERE–2014–BT–GUID–0033 consistent with the understanding of the Working Group as set forth in its recommendations. (Docket No. EERE–2011–BT–CE–0077–0070, Attachment) This SNOPR responds to comments on the August 19 and 20, 2014, guidance documents related to testing and rating split systems, which are discussed in more detail in section III.A. The proposed changes supplant these two draft guidance documents; DOE will not finalize the draft guidance documents and instead will provide any necessary clarity through this notice and the final rule. DOE believes the proposed changes are consistent with the intent of the Working Group.

On November 5, 2014, DOE published a request for information for energy conservation standards (ECS) for central air conditioners and heat pumps (November 2014 ECS RFI). 79 FR 65603. In response, several stakeholders provided comments suggesting that DOE amend the current test procedure. This SNOPR responds to those test procedure-related comments.

II. Summary of the Supplementary Notice of Proposed Rulemaking

This supplementary notice of proposed rulemaking (SNOPR) proposes revising the certification requirements and test procedure for central air conditioners and heat pumps based on various published material as discussed in section I.B.

DOE proposes to revise the basic model definition, add additional definitions for clarity, make certain revisions to the testing requirements for determination of certified ratings, add certain certification reporting requirements, revise requirements for determination of represented values, and add product-specific enforcement provisions. Some of the proposed revisions to the certification requirements would impact the energy conservation standard and thus would not be effective until the compliance date of any amended energy conservation standards.

DOE proposes to update requirements for Alternative Rating Methods (ARMs) used to determine performance metrics for central air conditioners and heat pumps based on the regulations for Alternative Efficiency Determination Methods (AEDMs) that are used to estimate performance for commercial HVAC equipment. Specifically, for central air conditioners and heat pumps, DOE proposes: (1) Revisions to nomenclature regarding ARMs; (2) rescinding DOE pre-approval of an ARM prior to use; (3) AEDM validation requirements; (4) a verification testing process; (5) actions a manufacturer could take following a verification test failure; and (6) consequences for invalid ratings. These proposed changes do not impact the energy conservation standard.

DOE proposes to revise the test procedure such that tests of multi-circuit products, triple-capacity northern heat pump products, and multi-blower products can be performed without the need of an interim waiver or a waiver. Existing interim waivers and waivers, as applicable, regarding these products would terminate on the effective date of a final rule promulgating the proposals in this SNOPR. DOE also reaffirms that the waivers associated with multi-split products have already terminated and that these products can also be tested using the current and proposed test procedure. These proposed changes do not impact the energy conservation standard and thus are proposed as part of revisions to Appendix M.

DOE also proposes to clarify that air-to-water heat pump products integrated with domestic water heating are not subject to central air conditioner and heat pump energy conservation standards. Accordingly, the waiver regarding these products would terminate effective 180 days after publication of a final rule that incorporates the proposals in this SNOPR.

DOE proposes revisions to the test methods and calculations for off mode power consumption that were proposed or modified in the June 2010 NOPR, April 2011 SNOPR, and October 2011 SNOPR. These revisions address comments received in response to the October 2011 SNOPR suggesting that test methods and calculations more accurately represent off-mode power consumption in field applications. These proposed changes do not impact the energy conservation standard. Specifically, DOE proposes the following:

(1) Establishment of separate testing and calculations that would depend on whether the tested unit is equipped with a crankcase heater and whether the crankcase heater is controlled during the test;

(2) Alteration of the testing temperatures such that the crankcase heater is tested in outdoor air conditions that are representative of the shoulder and heating seasons;

(3) Changing of the testing methodology for determining the power consumption of the low-voltage components (P_X);

(4) Changing of the calculation of the off mode power rating ($P_{W,OFF}$) such that the off mode power for the shoulder and heating seasons are equally weighted;

(5) Implementation of a time delay credit for energy consumption, including credits in the form of scaling factors and multipliers for energy-efficient products that require larger crankcase heaters to maintain product reliability;

(6) Addition of an alternative energy determination method for determining off mode power for coil-only split-systems; and

(7) Inclusion of a means for calculating a basic model's annual off mode energy use, from which manufacturers could make representations about their products' off mode energy use.

DOE also proposes changes to improve the repeatability and reduce the test burden of the test procedure. These proposed changes do not impact the energy conservation standard. Specifically, DOE proposes the following:

(1) Clarification of fan speed settings;

(2) Clarification of insulation requirements for refrigerant lines and addition of a requirement for insulating mass flow meters;

(3) Addition of a requirement to demonstrate inlet air temperature uniformity for the outdoor unit using thermocouples;

(4) Addition of a requirement that outdoor air conditions be measured using sensors measuring the air captured by the air sampling device(s) rather than the temperature sensors located in the air stream approaching the inlets;

(5) Addition of a requirement that the air sampling device and the tubing that transfers the collected air to the dry bulb temperature sensor be at least two inches from the test chamber floor, and a requirement that humidity measurements be based on dry bulb temperature measurements made at the same location as the corresponding wet bulb temperature measurements used to determine humidity;

(6) Clarification of maximum speed for variable-speed compressors;

(7) Addition of requirements that improve consistency of refrigerant charging procedures;

(8) Allowance of an alternative arrangement for cyclic tests to replace the currently-required damper in the inlet portion of the indoor air ductwork for single-package ducted units;

(9) Clarification of the proper supply voltage for testing;

(10) Revision of the determination of the coefficient of cyclic degradation (C_D);

(11) Option for a break-in period of up to 20 hours;

(12) Update of references to industry standards where appropriate;

(13) Withdrawal of all references to ASHRAE Standard 116–1995;

(14) Inclusion of information from the draft AHRI 210/240; and

(15) Provisions regarding damping of pressure transducer signals to avoid exceeding test operating tolerances due to high frequency fluctuations.

Lastly, DOE proposes clarifications of any sections of the test procedure that may be ambiguous. Specifically, DOE proposes to add reference to an industry standard for testing variable refrigerant flow multi-split systems; replace the informative guidance table for using the test procedure; and clarify definitions of multi-split systems and mini-split systems, which DOE now proposes to call single-zone-multiple-unit systems. These proposed changes do not impact the energy conservation standard.

DOE notes that all the above-listed proposed changes to the test procedure would not impact the energy conservation standard and as such are proposed as part of a revised Appendix M. Given the extensive changes proposed for Appendix M, DOE has provided a full re-print of Appendix M in the regulatory text of this SNOPR that includes the changes proposed in this SNOPR as well as those proposed in the June 2010 NOPR and the April 2011 and October 2011 SNOPRs that have not been withdrawn.

DOE also proposes various changes to the test procedure that would affect the energy conservation standard and proposes incorporating these changes in a new appendix, Appendix M1 to Subpart B of 10 CFR part 430, which includes the text of Appendix M to Subpart B of 10 CFR part 430 with amendments as proposed in this SNOPR. Specifically, DOE proposes the following:

(1) Increase the minimum external static pressure requirements for conventional central air conditioners and heat pumps to better represent the external static pressure conditions in field installations; [4]

(2) Add a minimum external static pressure adjustment to correct for potentially unrepresentative external static pressure conditions for blower coil systems tested with condensing furnaces;

(3) Raise the default fan power for coil-only systems;

(4) Adjust the heating load line equation such that the zero load point occurs at 55 °F for Region IV, the adjustment factor is 1.3, and the heating load is tied with the heat pump's cooling capacity; and

(5) Revise the heating mode test procedure to allow more options for products equipped with variable-speed compressors.

DOE proposes to make the test procedure revisions in this SNOPR as reflected in the revised Appendix M to Subpart B of 10 CFR part 430 effective on a date 180 days after publication of the test procedure final rule in the **Federal Register** and mandatory for testing to determine compliance with the existing energy conservation standards for central air conditioners and heat pumps as of that date. DOE proposes to make the test procedure revisions in this SNOPR as reflected in the proposed new Appendix M1 to Subpart B of 10 CFR part 430 effective on the compliance date of the revised energy conservation standards for central air conditioners and heat pumps and mandatory for testing to determine compliance with said revised standards as of that date. DOE will address any comments received in response to this SNOPR in the test procedure final rule.

As noted in section I.A, 42 U.S.C. 6293(e) requires that DOE shall determine to what extent, if any, the proposed test procedure would alter the measured energy efficiency and measured energy use. DOE has determined that some of these proposed amendments would result in a change in measured energy efficiency and measured energy use for central air conditioners and heat pumps. Therefore, DOE is conducting a separate rulemaking to amend the energy conservation standards for central air conditioners and heat pumps with respect to the revised test procedure, once its proposals become final. (Docket No. EERE–2014–BT–STD–0048)

III. Discussion

This section discusses the revisions to the certification requirements and test procedure that DOE proposes in this SNOPR.

A. Definitions, Testing, Rating, and Compliance of Basic Models of Central Air Conditioners and Heat Pumps

On August 19 and 20, 2014, DOE issued two draft guidance documents regarding the test procedure for central air conditioners and heat pumps. One guidance document dealt with testing and rating split systems with blower coil indoor units (Docket No. EERE–2014–BT–GUID–0033); and the other dealt more generally with selecting units for testing, rating, and certifying split-system combinations, including discussion of basic models and of condensing units and evaporator coils sold separately for replacement installation (Docket No. EERE–2014–BT–GUID–0032). The comments in response to these draft guidance documents are discussed in this section of the notice. DOE has proposed changes to the substance of the draft guidance that reflects the comments received as well as the recommendations of the regional standards enforcement Working Group (Docket No. EERE–2011–BT–CE–0077–0070, Attachment). The proposed changes supplant the two draft guidance documents; DOE will not finalize the draft guidance documents and instead will provide any necessary clarity through this notice and the final rule.

1. Basic Model Definition

In the August 20, 2014 draft guidance document (Docket No. EERE–2014–BT–GUID–0032), DOE clarified that a basic

[4] Conventional central air conditioners and heat pumps are those products that are not short duct systems (see section III.F.2) or small-duct, high-velocity systems.

model means all units of a given type (or class thereof) having the same primary energy source, and which have essentially identical electrical, physical, and functional characteristics that affect energy efficiency. 10 CFR 430.2. DOE noted that for split-system units, this includes a condensing (outdoor) unit and a coil-only or blower coil indoor unit.[5]

In the guidance document, DOE also stated that if a company intended to claim ratings for each combination of outdoor unit and indoor unit, it must certify all possible model combinations as separate basic models. Only the basic model combinations that include a highest sales volume combination (HSVC) indoor unit for a given outdoor unit must be tested, while the other basic models may be rated with an ARM. Alternatively, the manufacturer could make all combinations of a given model of outdoor unit part of the same basic model and not rate all individual combinations. However, all combinations within the basic model would have to have the same represented efficiency, based on the least efficient combination. This association would be included in the certification report.

In response to the draft guidance document, AHRI and Johnson Controls (JCI) stated that there was a difference between DOE's definition of Basic Model and the industry's use of Basic Model Groups (Docket No. EERE–2014–BT–GUID–0032, AHRI, No. 8 at p. 1; JCI, No. 5 at p. 3) Johnson Controls specified that most manufacturers consider a specific outdoor model with all combinations of indoor units to be a basic model and notes that DOE's definition appeared to allow outdoor units to be combined into a basic model if they share the same ratings. (*Id.*)

DOE reviewed AHRI's Operations Manual for Unitary Small Air-Conditioners and Air-Source Heat Pumps (Includes Mixed-Match Coils) (Rated Below 65,000 Btu/h) Certification Program (AHRI OM 210/240—January 2014).[6] This document specifies the following definitions:

A Split System BMG [Basic Model Group [7]] consists of products with the same Outdoor Unit used with several Indoor Unit combinations (*i.e.* horizontal, vertical, A-coil, etc.). Same Outdoor Unit refers to models with the same or comparable compressor, used with the same outdoor coil surface area and the same outdoor air quantity.

An ICM [Independent Coil Manufacturer] BMG consists of coils (Indoor Units) with matching capacity ranges of 6,000 Btu/h and the following identical geometry parameters: Air-handler, evaporator fan type, evaporator number of rows, type of equipment (air-cooled, water-cooled or evaporatively-cooled), evaporator tube centers, evaporator fin types, evaporator fins/inch, evaporator tube OD, evaporator expansion device, fin length per slab, fin height per slab, number of slabs in the coil, fin material type, tube material type, and total number of active tubes (refer to Table H1).

In order to create consistency within the industry, DOE proposes to modify its basic model definition for central air conditioners and heat pumps. Specifically, DOE proposes that manufacturers would have a choice in how to assign individual models (for single-package units) or combinations (for split systems) to basic models. Specifically, manufacturers may consider each individual model/combination its own basic model, or manufacturers may assign all individual models of the same single-package system or all individual combinations using the same model of outdoor unit (for outdoor unit manufacturers (OUM)) or model of indoor unit (for independent coil manufacturers (ICM)) to the same basic model.

DOE believes that this proposal is consistent with the existing general definition of basic model which refers to all units having the same primary energy source and having essentially identical electrical, physical, and functional characteristics that affect energy consumption or energy efficiency. However, DOE proposes to further define the physical characteristics necessary to assign individual models or combinations to the same basic model:

(i) For split-systems manufactured by independent coil manufacturers (ICMs) and for small-duct, high velocity systems: All individual combinations having the same model of indoor unit, which means the same or comparably performing indoor coil(s) [same face area; fin material, depth, style (*e.g.* wavy, louvered), and density (fins per inch); tube pattern, material, diameter, wall thickness, and internal enhancement], indoor fan(s) [same air flow with the same indoor coil and external static pressure, same power input], auxiliary refrigeration system components if present (*e.g.* expansion valve), and controls.

(ii) for split-systems manufactured by outdoor unit manufacturers (OUMs): All individual combinations having the same model of outdoor unit, which means the same or comparably performing compressor(s) [same displacement rate (volume per time) and same capacity and power input when tested under the same operating conditions], outdoor coil(s) [same face area; fin material, depth, style (*e.g.* wavy, louvered), and density (fins per inch); tube pattern, material, diameter, wall thickness, and internal enhancement], outdoor fan(s) [same air flow with the same outdoor coil, same power input], auxiliary refrigeration system components if present (*e.g.* suction accumulator, reversing valve, expansion valve), and controls.

The proposed requirements for single-package models combine the requirements listed describing the characteristics of the same models of indoor units and same models of outdoor units. DOE requests comment on its proposal to modify the definition of ''basic model'', as well as the proposed physical characteristics required for assigning individual models or combinations to the same basic model, as described above.

If manufacturers assign each individual model or combination to its own basic model, DOE proposes that each individual model/combination must be tested and that an AEDM cannot be applied. This option would limit a manufacturer's risk in terms of noncompliance but would represent increased testing burden compared to the other option.

If manufacturers assign all individual combinations of a model of outdoor unit (for OUMs) or model of indoor unit (for ICMs) to a single basic model, DOE further proposes that, in contrast to the draft guidance document and DOE's current regulations, each individual combination within a basic model (*i.e.,* having the same model of outdoor unit for OUMs, or having the same model of indoor unit for ICMs) must be certified with a rating determined for that individual combination. In other words, individual combinations within the same basic model that have different SEER ratings, for example, would be certified with their individual ratings, rather than with the lowest SEER of the basic model. However, only one individual combination in each basic

[5] DOE notes that a blower coil indoor unit may consist of separate units, one that includes the indoor coil and another that is an air mover, either a modular blower or a furnace. Alternatively, a blower coil indoor unit may be a single unit that includes both the indoor coil and the indoor fan. Hence, in further discussion, ''blower coil indoor unit'' may be any one of these three options.

[6] Available at: *www.ahrinet.org/App_Content/ahri/files/Certification/OM%20pdfs/USE_OM.pdf* (Last accessed March 20, 2015.)

[7] According to the AHRI General Operations Manual, a basic model is a product possessing a discrete performance rating, whereas a basic model group is a set of models that share characteristics that allow the performance of one model to be representative of the group, although the group does not have to share discrete performance. (General OM—October 2013). Available at: *www.ahrinet.org/App_Content/ahri/files/Certification/OM%20pdfs/General_OM.pdf.* (Last accessed March 24, 2015.)

model would have to be tested (see section III.A.3.a), while the others may be rated using an AEDM. This option reduces testing burden but increases risk. Specifically, if any one of the combinations within a basic model fails to meet the applicable standard, then all of the combinations within the basic model fail, and the entire basic model must be taken off the market *(i.e.,* the model of outdoor unit for OUMs and the model of indoor unit for ICMs). All combinations offered for sale (*e.g.,* for OUMs, based on a given model of outdoor unit which is the basis of the basic model) must be certified, and all of these combinations within the basic model must meet applicable standards. DOE notes that under this proposed rule, ICMs and OUMs will continue to have an independent obligation to test, provide certified ratings, and ensure compliance with applicable standards.

By way of example, a manufacturer has two models of outdoor units, models A and B. Each of models A and B can be paired with any of three models of indoor units—models 1, 2, and 3. Per the guidance document, the manufacturer could either: (1) Make each combination a separate basic model (*i.e.,* A–1, A–2, A–3, B–1, B–2, and B–3), test the HSVC for each model of outdoor unit (A and B), and rate the other basic models with an ARM; (2) make each combination a separate basic model and test each of them; or (3) make combinations A–2 and A–3 part of basic model A–1 (and similarly B–2 and B–3 part of B–1) and represent the efficiency of all three with the same certified rating at the least efficient combination in the basic model. In this proposal, the manufacturer could either: (1) Make each combination a separate basic model and test and rate each combination; or (2) make combinations A–2 and A–3 part of basic model A–1 (and similarly B–2 and B–3 part of B–1), test the HSVC combination for the model of outdoor unit, and test or use an AEDM to rate the efficiency of all other combinations in the basic model.

DOE notes that unlike in the current ''basic model'' definition that contains less detail on what constitutes essentially identical characteristics, under DOE's new proposal, manufacturers would not be able to assign different models of outdoor units (for OUMs) or models of indoor units (for ICMs) to a single basic model Based on a review of certification data, it appears that most manufacturers are not currently doing this, so DOE expects this proposal to have limited impact on current practices.

Additional rating and certification requirements for single-package models and multi-split, multi-circuit, and single-zone-multiple-coil models are described in section III.A.3.c.

Revisions to the test procedure as proposed in section III.D of this SNOPR enable the determination of off mode power consumption, which reflects the operation of the contributing components: Crankcase heater and low-voltage controls. Varying designs of these components produce different off mode power consumption. DOE proposes that if individual combinations that are otherwise identical are offered with multiple options for off mode related components, manufacturers at a minimum must rate the individual combination with the crankcase heater and controls which are the most consumptive (*i.e.,* would result in the largest value of $P_{W,OFF}$). If a manufacturer wishes to also make representations for less consumptive off mode options for the same individual combination, the manufacturer may provide separate ratings, but the manufacturer must differentiate the individual model numbers for these ratings. These individual combinations would be within the same basic model. DOE discusses this in relation to single-package units in section III.A.3.e.

DOE also proposes to clarify that a central air conditioner or central air conditioning heat pump may consist of: A single-package unit; an outdoor unit and one or more indoor units (*e.g.,* a single-split or multi-split system); an indoor unit only (rated as a combination by an ICM with an OUM's outdoor unit); or an outdoor unit only (with no match, rated by an OUM with the coil specified in this test procedure). DOE has proposed adding these specifications to the definition of central air conditioner or central air conditioning heat pump in 10 CFR 430.2. In the certification reports submitted by OUMs for split systems, DOE proposes that manufacturers must report the basic model number as well as the individual model numbers of the indoor unit(s) and the air mover where applicable.

2. Additional Definitions

In order to specify differences in the proposed basic model definition for ICMs and OUMs, DOE also proposes the following definitions:

Independent coil manufacturer (ICM) means a manufacturer that manufactures indoor units but does not manufacture single-package units or outdoor units.

Outdoor unit manufacturer (OUM) means a manufacturer of single-package units, outdoor units, and/or both indoor units and outdoor units.

With respect to any given basic model, a manufacturer could be an ICM or an OUM. DOE notes that the use of the term ''manufacturer'' in these definitions refers to any person who manufactures, produces, assembles, or imports a consumer product. *See* 42 U.S.C. 6291(10, 12).

DOE also proposes to define variable refrigerant flow (VRF) systems as a kind of multi-split system. DOE notes that not all VRF systems are commercial equipment. Therefore, the proposed definition also clarifies that VRF systems that are single-phase and less than 65,000 btu/h are a kind of central air conditioners and central air conditioning heat pumps.

DOE also proposes to modify the definition of indoor unit. DOE noted in market research that ICMs may not always provide cooling mode expansion devices with indoor units. Therefore to provide clarity in the testing and rating requirements, DOE proposes to change the definition of ''indoor unit'' to clarify that it may not include the cooling mode expansion device. Also, for reasons discussed in section III.A.3.f, DOE proposes to include the casing in the definition so that uncased coils will not be considered indoor units:

Indoor unit transfers heat between the refrigerant and the indoor air, and consists of an indoor coil and casing and may include a cooling mode expansion device and/or an air moving device.

DOE proposes to specify in Appendix M that if the indoor unit does not ship with a cooling mode expansion device, the system should be tested using the device as specified in the installation instructions provided with the indoor unit, or if no device is specified, using a TXV. DOE notes that the AHRI program does not appear to assume that the expansion device is necessarily provided with the coil, *i.e.,* AHRI's operations manual specifies that for testing for the AHRI certification program, the ICM must provide an indoor coil and expansion device.

Finally, DOE is proposing to clarify several other definitions currently in 10 CFR 430.2 with minor wording changes and move them to 10 CFR 430, Subpart B, Appendix M. The proposed definition of central air conditioner or central air conditioning heat pump in 10 CFR 430.2 refers the reader to the additional central air conditioner-related definitions in Appendix M. Locating all of the relevant definitions in the appendix will make it easier to find and reference them. DOE also proposes to remove entirely the definitions for ''condenser-evaporator coil combination'' and ''coil family'' as those terms no longer appear in the proposed regulations.

3. Determination of Certified Rating

During the regional standards Working Group meetings, participants invested a great deal of time and energy discussing the relationship between system ratings and an effective enforcement plan. As part of the negotiations, the Working Group requested that DOE issue guidance regarding the applicability of regional standards to indoor units and outdoor units distributed separately and the applicability of regional standards to different combinations of indoor and outdoor units. DOE developed two draft guidance documents to address these issues. After consideration of the Working Group's discussions and the comments received on the two draft guidance documents, DOE determined that regulatory changes would be necessary to implement the approach agreed to by the Working Group. DOE is proposing several of those regulatory changes as part of this rulemaking. The remainder of the necessary regulatory changes will be addressed in a forthcoming regional standards enforcement notice of proposed rulemaking.

During the pendency of the rulemakings (CAC TP and Regional Standards), DOE reaffirms its commitment to the approach advocated by the Working Group, subject to consideration of comments received in the rulemakings to effectuate the necessary changes to the regulations. The following sections describe the two guidance documents and DOE's proposals to address them as part of this rulemaking.

a. Single-Split-System Air Conditioners Rated by OUMs

In the August 20, 2014 draft guidance document (Aug 20 Guidance) (EERE–2014–BT–GUID–0032), DOE proposed to clarify that when selecting which split-system air conditioner and heat pump units to test (in accordance with the DOE test procedure), a unit of each outdoor model must be paired with a unit of one selected indoor model. 10 CFR 429.16(a)(2)(i). Specifically, the manufacturer must test the condenser-evaporator coil combination that includes the model of evaporator coil that is likely to have the largest volume of retail sales with the particular model of condensing unit. 10 CFR 429.16(a)(2)(ii) (This combination is also known as the highest sales volume combination or HSVC.) That is, the HSVC for each condensing unit may not be rated using an ARM. (See section III.B regarding DOE's proposal to switch from ARMs to AEDMs for this product.)

The guidance further stated that for any other split-system combination that includes the same outdoor unit model but a different indoor unit model than the HSVC, manufacturers may determine represented values of energy efficiency (including those values that, for each combination, must be reported in certifications to DOE) of a split-system central air conditioner or heat pump basic model combination either by testing the combination in accordance with the DOE test procedure or by applying an ARM that has been approved by DOE in accordance with the provisions of 10 CFR 429.70(e)(1) and (2). 10 CFR 429.16(a)(2)(ii)(A) and (B)(1).

In the August 19, 2014 draft guidance document (August 19 Guidance) (EERE–2014–BT–GUID–0033), DOE proposed to clarify that split-system central air conditioners other than those with single-speed compressors may be tested and rated using a blower coil only if the condensing unit is sold exclusively for use with a blower coil indoor unit. 10 CFR 429.16(a)(2)(ii). The guidance stated that there is no provision in the Code of Federal Regulations (CFR) permitting use of a blower coil for testing and rating a split-system central air conditioner where the condensing unit is also offered for sale with a coil-only indoor unit, and that, furthermore, there is no provision in the CFR permitting the use of a blower coil for testing and rating a condensing unit with a single-speed compressor.

Commenters generally agreed with the information in the August 20 Guidance regarding selecting units for testing, rating, and certifying split-system combinations. In addition, in response to the August 19 Guidance, DOE received nearly identical comments from several stakeholders generally agreeing with the intent of the guidance to emphasize that single-speed compressor products must be tested and rated with a coil-only system as HSVC. (Docket No. EERE–2014–BT–GUID–0033, AHRI No. 8 at p. 2; Nordyne, No. 9 at p. 1; Lennox, No. 4 at p. 2; Ingersoll Rand, No. 3 at p. 1; Goodman, No. 10 at p. 1; Rheem, No. 2 at p. 2; JCI, No. 5 at p. 2–3) These stakeholders, as well as Mortex, clarified that other combinations besides the HSVC, including blower coil combinations, can be rated through testing or using an ARM. (*Id.;* Mortex, No. 6 at p. 1) Stakeholders recommended language identical to or similar to the following:

> Split-system central air conditioners with single-speed compressors must be tested and rated using a coil-only for the HSVC. 10 CFR 429.16(a)(2)(ii). Such single-speed systems may be rated with other coil-only and blower coil indoor units through the use of a DOE approved ARM or by testing. 10 CFR 429.16(a)(2)(ii)(A) and 10 CFR 429.16(a)(2)(ii)(B). Furthermore, there is no provision in the CFR permitting the use of a blowercoil for testing and rating a condensing unit with a single-speed compressor for the HSVC, unless:
>
> • [Version 1] the unit is a mini-split, multi-split or through-the-wall, OR
>
> • [Version 2] the unit is sold and installed only with blower-coil indoor units.
>
> (Version 1: Docket No. EERE–2014–BT–GUID–0033, Lennox, No. 4 at p. 2; Ingersoll Rand, No. 3 at p. 2; Goodman, No. 10 at p. 3; Rheem, No. 2 at p. 3; JCI, No. 5 at p. 4; Version 2: AHRI No. 8 at p. 3; Nordyne, No. 9 at p. 2)

AHRI and several manufacturers disputed that when using a compressor other than single speed, the HSVC can never be a blower coil unless it is exclusively used with a blower coil. AHRI and the manufacturers reported that many multi-stage capacity products are tested and rated with high efficiency blower coil or furnace products as the HSVC even though those systems are also rated for coil-only use. (Docket No. EERE–2014–BT–GUID–0033, AHRI No. 8 at p. 2; Nordyne, No. 9 at p. 2; Lennox, No. 4 at p. 2; Ingersoll Rand, No. 3 at p. 2; Goodman, No. 10 at p. 2; Rheem, No. 2 at p. 2; Carrier, No. 7 at p. 1) Johnson Controls responded that they test and rate multi-speed compressor units with blower coils or furnace/coils as the HSVC. (JCI, No. 5 at p. 3). AHRI and the manufacturers reported that not allowing this could limit the application of high performing products, and that it is important for units designed for blower coil to also be rated as coil-only to offer certain consumers a compromise of cost and performance. AHRI and the manufacturers proposed the following modified language:

> Split-system central air conditioners other than those with single-speed compressors (two-stage or multi-stage) may be tested and rated using a blower-coil only as HSVC only if the condensing unit design intent is for use with a blower-coil indoor unit (*e.g.* the evaporator coil that is likely to have the largest volume of retails sales with the particular model of condensing unit is a blower-coil).
>
> (Docket No. EERE–2014–BT–GUID–0033, AHRI No. 8 at p. 3; Nordyne, No. 9 at p. 2; Lennox, No. 4 at p. 3; Ingersoll Rand, No. 3 at p. 2; Goodman, No. 10 at p. 3; Rheem, No. 2 at p. 3; JCI, No. 5 at p. 4; Carrier, No. 7 at p. 2 with slightly different language)

After reviewing the comments, DOE proposes to make changes to 10 CFR 429.16 to revise the testing and rating requirements for single-split-system air conditioners. (See section III.F.4

regarding discussion of new definitions including ''single-split-system.'') These changes will occur in two phases. In the first phase, prior to the compliance date of any amended energy conservation standards, DOE proposes only a slight change to the current requirements. Specifically, DOE proposes that for single-split-system air conditioners with single capacity condensing units, each model of outdoor unit must be tested with the model of coil-only indoor unit that is likely to have the largest volume of retail sales with the particular model of outdoor unit. For split-system air conditioners with other than single capacity condensing units each model of outdoor unit must also be tested with the model of coil-only indoor unit likely to have the largest sales volume unless the model of outdoor unit is sold only with model(s) of blower coil indoor units, in which case it must be tested and rated with the model of blower coil indoor unit likely to have the highest sales volume. However, any other combination may be rated through testing or use of an AEDM. (See section III.B regarding proposed changes from ARM to AEDM.) Therefore, both single capacity and other than single capacity systems may be rated with models of both coil-only or blower coil indoor units, but if the system is sold with a model of coil-only indoor unit, it must, at a minimum, be tested in that combination.

In the second phase, DOE anticipates that any amended energy conservation standards will be based on blower coil ratings. Therefore, DOE proposes that all single-split-system air conditioner basic models be tested and rated with the model of blower coil indoor unit likely to have the largest volume of retail sales with that model of outdoor unit. Manufacturers would be required to also rate all other blower coil and coil-only combinations within the basic model but would be permitted do so through testing or an AEDM. DOE believes that this proposal will offer the benefits of design for high performance through the use of blower coils as well as providing appropriate representations for coil-only combinations. In addition, given that most basic models are currently submitted as blower coil ratings, this change will align DOE requirements with industry practice. This proposed change would also be accounted for in the parallel energy conservation standards rulemaking, and is contingent upon any proposed amended standards being based on blower coil ratings.

Table III.1 summarizes these proposed changes.

TABLE III.1—TEST REQUIREMENTS FOR SINGLE-SPLIT-SYSTEM NON-SPACE-CONSTRAINED AIR CONDITIONERS RATED BY OUMS

Date	Equipment type	Must test each:	With:
Before the compliance date for any amended energy conservation standards.	Split-System AC with single capacity condensing unit.	Model of Outdoor Unit	The model of coil-only indoor unit that is likely to have the largest volume of retail sales with the particular model of outdoor unit.
	Split-System AC with other than single capacity condensing unit.	Model of Outdoor Unit	The model of coil-only indoor unit that is likely to have the largest volume of retail sales with the particular model of outdoor unit, unless the model of outdoor unit is only sold with model(s) of blower coil indoor units in which case, the model of blower coil indoor unit that is likely to have the largest volume of retail sales with the particular model of outdoor unit.
After the compliance date for any amended energy conservation standards.	Split-system AC	Model of Outdoor Unit	The model of blower coil indoor unit that is likely to have the largest volume of retail sales with the particular model of outdoor unit.

In order to facilitate these changes, DOE also proposes definitions of blower coil indoor unit and coil-only indoor unit:

- *Blower coil indoor unit* means the indoor unit of a split-system central air conditioner or heat pump that includes a refrigerant-to-air heat exchanger coil, may include a cooling-mode expansion device, and includes either an indoor blower housed with the coil or a separate designated air mover such as a furnace or a modular blower (as defined in Appendix AA).
- *Blower coil system* refers to a split-system that includes one or more blower coil indoor units.
- *Coil-only indoor unit* means the indoor unit of a split-system central air conditioner or heat pump that includes a refrigerant-to-air heat exchanger coil and may include a cooling-mode expansion device, but does not include an indoor blower housed with the coil, and does not include a separate designated air mover such as a furnace or a modular blower (as defined in Appendix AA). A coil-only indoor unit is designed to use a separately-installed furnace or a modular blower for indoor air movement.
- *Coil-only system* refers to a system that includes one or more coil-only indoor units.

DOE notes that these proposed testing requirements, when combined with the proposed definition for basic model, require that each basic model have at least one rating determined through testing; no basic model can be rated solely using an AEDM.

DOE also proposes that in the certification report, manufacturers state whether each rating is for a coil-only or blower coil combination.

DOE seeks comment on its proposed changes to the determination of certified ratings for single-split-system air conditioners when rated by an OUM, as well as on the proposed definitions for blower coil and coil-only indoor units.

b. Split-System Heat Pumps and Space-Constrained Split Systems

The current requirements for split-system heat pumps in 10 CFR 429.16 require testing a condenser-evaporator coil combination with the evaporator coil likely to have the largest volume of retail sales with the particular model of condensing unit. The coil-only requirement does not apply to split-system heat pumps, because central heat pump indoor units nearly always include both a coil and a fan.

In this notice, DOE proposes to slightly modify the wording explaining this requirement; specifically, the requirement would use the more general terms ''indoor unit'' and ''outdoor unit,'' rather than ''evaporator coil'' and ''condensing unit,'' since the requirement addresses heat pumps. DOE also proposes to apply this same test requirement to space-constrained split-system air conditioners and heat pumps. The current requirements in 10 CFR

429.16 do not specifically call out space-constrained systems, and as such, the current coil-only requirements for split-system air conditioners apply to space-constrained split-system air conditioners. Therefore, this proposal will change test procedures for space-constrained split-system air conditioners but will not change, other than in nomenclature, the test procedures for space-constrained split-system heat pumps.

c. Multi-Split, Multi-Circuit, and Single-Zone-Multiple-Coil Units

The current requirements in 10 CFR 429.16(a)(2)(ii) specify that multi-split systems and mini-split systems designed to always be installed with more than one indoor unit (now proposed to be called single-zone-multiple-coil units, see section III.F.4) be tested using a ''tested combination'' as defined in 10 CFR 430.2. For multi-split systems, each model of condensing unit currently must be tested with a non-ducted tested combination and a ducted tested combination. Furthermore, current requirements for testing with a coil-only indoor unit do not apply to mini-splits or multi-splits, as the general use of these terms in the industry refers to specific types of systems with blower coil indoor units. *Id.*

The current requirements also state that for other multi-split systems that include the same model of condensing unit but a different set of evaporator coils, whether the evaporator coil(s) are manufactured by the same manufacturer or by a component manufacturer (*i.e.,* ICM), the rating must be: (1) Set equal to the rating for the non-ducted indoor unit system tested (for systems composed entirely of non-ducted units), (2) set equal to the rating for the ducted indoor unit system tested (for systems composed entirely of ducted units), or (3) set equal to the mean of the values for the two systems (for systems having a mix of non-ducted and ducted indoor units). (10 CFR 429.16(a)(2)(ii))

In this notice, DOE proposes a slight modification to the testing requirements for single-zone-multiple-coil and multi-split systems, and adds similar requirements for testing multi-circuit systems (see section III.C.2 for more information about these systems). DOE also clarifies that these requirements apply to VRF systems that are single-phase and less than 65,000 Btu/h (see section III.A.3.c for more details). For all multi-split, multi-circuit, and single-zone-multiple-coil split systems, DOE proposes that at a minimum, each model of outdoor unit must be tested as part of a tested combination (as defined in the CFR) composed entirely of non-ducted indoor units. For any models of outdoor units also sold with short-ducted indoor units, a second ''tested combination'' composed entirely of short-ducted indoor units would be required to be tested. DOE also proposes the manufacturers may rate a mixed non-ducted/short-ducted combination as the mean of the represented values for the tested non-ducted and short-ducted combinations.

Under the proposed definition of basic model, these three combinations (non-ducted, short-ducted, and mixed) would represent a single basic model. When certifying the basic model, manufacturers should report ''* * *'' for the indoor unit model number, and report the test sample size as the total of all the units tested for the basic model, not just the units tested for each combination. For example, if the manufacturer tests 2 units of a non-ducted combination and 2 units of a short-ducted combination, and also rates a mix-match combination, the manufacturer should specify ''4'' as the test sample size for the basic model, while providing the rating for each combination. DOE also proposes that manufacturers be allowed to test and rate specific individual combinations as separate basic models, even if they share the same model of outdoor unit. In this case, the manufacturer must provide the individual model numbers for the indoor units rather than stating ''* * *''. Table III.2 provides an example of both situations.

TABLE III.2—EXAMPLE RATINGS FOR MULTI-SPLIT SYSTEMS

Basic model	Individual model (outdoor unit)	Individual model (indoor unit)	Sample size	Ducted rating	Non-ducted rating	Mix rating
ABC	ABC	* * *	4	14	15	14.5
ABC1	ABC	2–A123; 3–JH746	2		17	

DOE requests comment on whether additional requirements are necessary for multi-split systems paired with models of conventional ducted indoor units rather than short-duct indoor units.

DOE also notes that the test procedure currently allows testing of only non-ducted or short-ducted systems, and not combinations of the two. Therefore to rate individual mix-match combinations, manufacturers would have to test 4 units—2 ducted and 2 short-ducted. DOE requests comment on whether manufacturers should have the ability to test mix-match systems using the test procedure rather than rating them using an average of the other tested systems. DOE also requests comment on whether manufacturers should be able to rate mix-match systems using other than a straight average, such as a weighting by the number of non-ducted or short-ducted units. Finally, DOE requests comment on whether the definition of ''tested combination'' is appropriate for rating specific individual combinations, or whether manufacturers should be given more flexibility, such as testing with more than 5 indoor units.

In reviewing the market for multi-split systems, DOE determined that some are sold by OUMs with only models of small-duct, high velocity (SDHV) indoor units, or with a mix of models of short-duct and SDHV units. (See section III.F.2 regarding the proposed definition of short ducted systems.) These kinds of units are not currently explicitly addressed in DOE's test requirements. Therefore, DOE proposes to add a requirement that for any models of outdoor units also sold with models of SDHV indoor units, a ''tested combination'' composed entirely of SDHV indoor units must be used for testing and rating. However, such a system must be certified as a different basic model.

DOE notes that multi-split systems consisting of a model of outdoor unit paired with models of non-ducted or short-ducted units must meet the energy conservation standards for split-system air conditioners or heat pumps, while systems consisting of a model of outdoor unit paired with models of small-duct, high-velocity indoor units must meet SDHV standards. DOE proposes to add a limitations section in 429.16 that would require models of outdoor units that are rated and distributed in combinations that span multiple product classes to be tested and certified as compliant with the applicable standard for each product class. Even if a manufacturer sells a combination including models of both SDHV and other non-ducted or short-ducted indoor units, DOE proposes that the manufacturer may not provide a mix-match rating for such combinations. DOE requests comment on whether manufacturers would want to rate such combinations, and if so, how they would prefer to rate them (*i.e.,* by by taking the mean of a sample of tested non-ducted units and a sample of tested SDHV units or by testing a combination on non-ducted and SDHV units), and whether the SDHV or split-system standard would be most appropriate.

DOE understands that manufacturers of multi-split systems commonly only test one sample rather than complying with the sampling plan requirements in 429.16(a)(2)(i), which require a sample of two. DOE may consider moving toward a single unit sample for single-zone multiple-coil and multi-split system models, but in order to do so, DOE requires information on manufacturing and testing variability associated with these systems. In particular, DOE requires data to allow it to understand how a single unit sample may be representative of the population. DOE also requests information on what tolerances would need to be applied to the ratings of these units based on a single unit sample in order to account for the variability.

d. Basic Models Rated by ICMs

The current requirements in 10 CFR 429.16(a) require that each condensing unit of a split system must be tested using the HSVC associated with that condensing unit. There are no current requirements for testing each model of indoor unit of a split system. Non-HSVC combinations can be rated using an ARM, assuming the condensing unit of the combination has a separate HSVC rating based on testing. DOE understands that ICMs typically do not test all of their models of indoor units, but rather use OUM test data for outdoor units to generate ratings for their models. (See section III.B on AEDMs for further information.) In this notice, DOE proposes that ICMs must test and provide certified ratings for each model of indoor unit (*i.e.,* basic model) with the least-efficient model of outdoor unit with which it will be paired, where the least- efficient model of outdoor unit is the outdoor unit in the lowest-SEER combination as certified by the OUM. If more than one model of outdoor unit (with which the ICM wishes to rate the model of indoor unit) has the same lowest-SEER rating, the ICM may select one for testing purposes. This applies to both conventional (*i.e.,* non-short-duct, non-SDHV) split-systems and SDHV systems. ICMs must rate all other individual combinations of the same model of indoor unit, but may determine those ratings through testing or use of an AEDM.

DOE understands that this proposal would increase test burden for ICMs beyond the testing they currently conduct to meet ARM validation requirements. However, DOE believes this burden is outweighed by the benefit of providing more accurate ratings for models of indoor units sold by ICMs. Additional discussion regarding potential test requirements for ICMs can be found in the stakeholder comments regarding AEDMs in section III.B.5.

DOE understands that the proposed definition of basic model for an ICM, including what constitutes the ''same'' model of indoor unit and thus would be required to be tested, is important for accurately assessing the test burden for manufacturers as a result of this test proposal. DOE seeks comment on the basic model definition in section III.A.1. DOE also seeks comment on the proposed testing requirements for ICMs.

e. Single-Package Systems

In the current regulations, 10 CFR 429.16(a)(2)(i) states that each single-package system a must have a sample of sufficient size tested in accordance with the applicable provisions of Subpart B. In this notice, DOE proposes that the lowest SEER individual model within each basic model must be tested. DOE expects that in most cases, each single-package system will represent its own basic model. However, based on the proposal for the definition of basic model in section III.A.1, this may not always be the case. DOE notes that regardless, AEDMs do not apply to single-package models—manufacturers may either test and rate each individual single-package model, or if multiple individual models are assigned to the same basic model per the proposed requirements in the basic model definition, the manufacturer would be required to test only the lowest SEER individual model within the basic model and use that to determine the rating for the basic model.

DOE requests comment on the likelihood of multiple individual models of single-package units meeting the requirements proposed in the basic model definition to be assigned to the same basic model. DOE also requests comment on whether, if manufacturers are able to assign multiple individual models to a single basic model, manufacturers would want to use an AEDM to rate other individual models within the same basic model other than the lowest SEER individual model. Finally, DOE requests comment on whether manufacturers would want to employ an AEDM to rate the off-mode power consumption for other variations of off-mode associated with the basic model other than the variation tested.

DOE also proposes to specify this same requirement for space-constrained single-package air conditioners and heat pumps, which are currently not explicitly identified in the test requirement section.

f. Replacement Coils

DOE stated in the August 20 Guidance that an individual condensing unit or coil must meet the current Federal standard (National or regional) when paired with the appropriate other new part to make a system when tested in accordance with the DOE test procedure and sampling plan.

In response, AHRI and manufacturers commented that they believed the intent of the guidance was to clarify how the outdoor section of a split system used in a replacement situation can be tested and rated to meet the appropriate efficiency requirements. However, they felt this language should not apply to the indoor coil. AHRI stated that indoor coil is rarely changed and when it is, such as for an irreparable leak, it requires an exact replacement. In addition, they note that warranties can extend up to 10 years. Commenters also expressed the view that the guidance would not result in an improvement to installed product efficiency. (Docket No. EERE–2014–BT–GUID–0032, AHRI, No. 8 at pp. 2–3; Rheem, No. 2 at p. 3; Goodman, No. 10 at pp. 2–3; Ingersoll Rand, No. 3 at p. 2; Lennox, No. 4 at p. 2; Nordyne, No. 9 at p. 2) AHRI and the manufacturers recommended removing indoor coils from the draft guidance language on replacement. (*Id.;* JCI, No. 5 at p. 6)

Johnson Controls added further detail that using the term coil does not differentiate between service parts (listed with part numbers) and finished component assemblies (listed as a coil model) or between evaporator coils and condenser coils. Johnson Controls added that replacement parts cannot be rated as a finished coil assembly because the replacement parts do not contain sheet metal parts required to complete the installation. They also added that where the physical characteristics of an evaporator coil are significantly different when compared to a new system, replacing the old evaporator coil with a new coil model rather than a replacement part could result in increased cost and reduced performance, reliability, and comfort. (Docket No. EERE–2014–BT–GUID–0032, JCI, No. 5 at pp. 4–6)

Mortex also commented that replacement with a different evaporator coil design and size could lead to issues of fitting or size constraint problems and refrigerant metering and charging differences. The end result (if design air volume rate is hampered and refrigerant circuit performance is modified) could lead to less efficiency than the pre-failure situation. (Docket No. EERE–2014–BT–GUID–0032, Mortex, No. 6 at p. 1)

DOE also notes that the ASRAC regional standards enforcement Working Group agreed that manufacturers do not need to keep track of components including uncased coils. (Docket No. EERE–2011–BT–CE–0077–0070, Attachment)

In consideration of the comments and the Working Group proposals, DOE notes that its proposed definition of ''indoor unit'' refers to the box rather than just a coil. Accordingly, legacy indoor coil replacements and uncased coils would not meet the definition of indoor unit. Furthermore, by defining air conditioners and heat pumps as consisting of a single-package unit, an outdoor unit and one or more indoor units, an indoor unit only, or an outdoor unit only, legacy indoor coil replacements and uncased coils would not meet the definition of a central air conditioner or heat pump. Hence, they would not need to be tested or certified as meeting the standard.

g. Outdoor Units With No Match

For split-system central air conditioners and heat pumps, current DOE regulations require that manufacturers test the condensing unit and ''the evaporator coil that is likely to have the largest volume of retail sales with the particular model of condensing unit'' (commonly referred to as the highest sales volume combination). 10 CFR 4429.16(a)(2)(ii). Effective January 1, 2010, the U.S. Environmental Protection Agency (EPA) banned the sale and distribution of those central air conditioning systems and heat pump systems that are designed to use HCFC–22 refrigerant. 74 FR 66450 (Dec. 15, 2009). EPA's rulemaking included an exception for the manufacture and importation of replacement components, as long as those components are not pre-charged with HCFC–22. *Id.* at 66459–60.

Because complete HCFC–22 systems can no longer be distributed, manufacturers inquired how to test and rate individual components—because these components are sold separately, there are no highest sales volume combinations. Because the EPA prohibits distribution of new HCFC–22 condensing unit and coil combinations (*i.e.,* complete systems), there is no such thing as a HSVC, and hence, testing and rating of new HCFC–22 combinations cannot be conducted using the existing test procedure.

DOE expects that the HCFC–22 indoor and outdoor units remaining on the market are part of legacy offerings that were initially sold five or more years ago. These components of HCFC–22 systems were in production for sale as part of matched systems before the EPA regulations became effective on January 1, 2010. While EPA's rulemaking bans the sale of HCFC–22 systems that are charged with refrigerant while allowing sale of uncharged components of such systems, EPA's rule has no effect on the efficiency rating of these systems or on requirements for DOE efficiency standards that they must meet. The DOE test procedure used prior to January 15, 2010 that would have been used to rate these systems is no longer valid, thus these ratings can no longer be used as the basis for representing their efficiency. The individual indoor coils and outdoor units of such systems that could potentially meet the current standard may continue to be manufactured only if the manufacturer uses a valid test procedure to ensure compliance (*i.e.,* to certify compliance) and for representations.

Generally, when a model cannot be tested in accordance with the DOE test procedure, manufacturers must submit a petition for a test procedure waiver for DOE to assign an alternative test method. 10 CFR 430.27(a)(1) Instead, DOE proposes in this notice a test procedure that may be used for rating and certifying the compliance of these outdoor units. DOE proposes in this notice to specify coil characteristics that should be used when testing models of outdoor units that do not have a HSVC. Specifically, these requirements include limitations on coil tube geometries and dimensions and coil fin surface area. These outdoor unit models, when tested with the specified indoor units, must meet applicable Federal standards. (See section III.A.4 for more information on compliance.) This proposal is consistent with the regional standards enforcement Working Group recommendation that a person cannot install a replacement outdoor unit unless it is certified as part of a combination that meets the applicable standard. (Docket No. EERE–2011–BT–CE–0077–0070, Attachment) The new test procedure would be effective (*i.e.,* allowed for use for such certifications) 30 days after it is finalized and would be required for use for such systems (*i.e.,* rather than any granted waiver test procedure) beginning 180 days after it is finalized.

In response to the August 20, 2014 draft guidance document, Carrier requested clarification that the finalized guidance would replace DOE's draft guidance document issued on January 1, 2012, regarding central air conditioning systems and air conditioning heat pump systems that are designed to use dry R–22 condensing units. (Docket No. EERE–2014–BT–GUID–0032, Carrier, No. 7 at p. 2) If finalized, this proposed test procedure would replace both the 2012 guidance document for dry R–22 units as well as the 2014 draft guidance document on unit selection regarding condensing units for replacement applications.

4. Compliance With Federal (National or Regional) Standards

In the August 20, 2014 draft guidance document (EERE–2014–BT–GUID–0032), DOE discussed whether each basic model of split-system air conditioner or heat pump has to meet the applicable standard. DOE stated that compliance with standards is based on the statistical concept that an entire population of units (where ''unit'' refers to a complete system) of a basic model must meet the standard, recognizing that efficiency measurements for some units may be better or worse than the standard due to manufacturing or testing variation. Manufacturers apply the statistical formulae in 10 CFR 429.16 to demonstrate compliance, and DOE applies the statistical formulae in 10 CFR part 429, subpart C, Appendix A to determine compliance.

Further, DOE stated that the only condensing units and coils that may be installed in the region are those that can meet the regional standard when tested and rated as a new system in accordance with the test procedure and sampling plan as described above.

In response, AHRI and several manufacturers recommended the following additions to DOE's statements regarding compliance:

> ''Compliance with *national or regional standards* is based on the statistical concept that an entire population of units (where ''unit'' refers to a complete system) of a basic model *including Highest Sales Volume Tested Combination and all other combinations* must meet the standard, recognizing that some individual units may perform slightly better or worse than the design due to manufacturing or testing variation.''

(Docket No. EERE–2014–BT–GUID–0032, AHRI, No. 8 at p. 2; Rheem, No. 2 at p. 2; Goodman, No. 10 at p. 2; Ingersoll Rand, No. 3 at p. 1; Lennox, No. 4 at p. 2; Nordyne, No.

9 at pp. 1–2; JCI, No. 5 at p. 3; Carrier, No. 7 at p. 6)

In addition, Carrier commented that with respect to the discussion about selection of units for testing, the HSVC should be determined for the applicable region. (Docket No. EERE–2014–BT–GUID–0032, Carrier, No. 7 at p. 4)

AHRI and several manufacturers recommended the following addition to the paragraph on condensing units sold as replacements:

"In summary, DOE interprets for the regional standard to require that the least efficient rating combination for a specified model of condensing unit must be 14 SEER with a coil only rating where 14 SEER is the regional standard. Any model that has a certified combination below the regional standard cannot be installed in the region. This interpretation of the regional standard also applies to units shipped without refrigerant charge."

(Docket No. EERE–2014–BT–GUID–0032, AHRI, No. 8 at p. 2; Rheem, No. 2 at p. 3; Goodman, No. 10 at p. 3; Ingersoll Rand, No. 3 at p. 3; Lennox, No. 4 at p. 3; Nordyne, No. 9 at pp. 2–3; JCI, No. 5 at p. 6)

Carrier provided slightly different recommended language:

"Given the different Federal standards, National and regional, the least efficient rating combination for a specified model of condensing unit must: (i) in the regions where the regional standard applies, be rated and certified on as performing at or above the current regional standard with a coil only rating; and (ii) where the National standard applies, be rated and certified as performing at or above the current National standard with a coil only rating. For purposes of clarity, any basic model that has a certified combination below the current regional standard cannot be installed in the region. This interpretation also applies to dry condensing units." (Docket No. EERE–2014–BT–GUID–0032, Carrier, No. 7 at pp. 1–2)

In contrast, Carrier also suggested that the guidance document discussion of unit selection and basic models should replace references to "Federal standard" with "Federal (national or regional) standard". (Carrier, No. 7 at pp. 4–5)

The regional standards enforcement Working Group suggested the regional standards required clarification because a particular condensing unit may have a range of efficiency ratings when paired with various indoor evaporator coils and/or blowers. The Working Group provided the following four recommendations to clarify the regional standards: That (1) the least-efficient rated combination for a specified model of condensing unit must be 14 SEER for models installed in the Southeast and Southwest regions; (2) the least-efficient rated combination for a specified model of condensing unit must meet the minimum EER for models installed in the Southwest region; (3) any condensing unit model that has a certified combination that is below the regional standard(s) cannot be installed in that region; and (4) a condensing unit model certified below a regional standard by the original equipment manufacturer cannot be installed in a region subject to a regional standard(s) even with an independent coil manufacturer's indoor coil or air handler combination that may have a certified rating meeting the applicable regional standard(s). (Docket No. EERE–2011–BT–CE–0077–0070, Attachment)

After reviewing stakeholder comments and the Working Group report, DOE agrees that all individual models or combinations within a basic model must meet the applicable national or regional standard. DOE proposes to add requirements to the relevant provisions of section 430.32 that the least-efficient combination of each basic model must comply with the regional SEER and EER standards.

In addition, as noted in section III.A.1, DOE proposes that if any individual combination within a basic model fails to meet the standard, the entire basic model (*i.e.,* model of outdoor unit) must be removed from the market. In order to clarify the limitations on sales of models of outdoor units across regions with different standards, DOE proposes to add a limitation in section 429.16 that any model of outdoor unit that is certified in a combination that does not meet all regional standards cannot also be certified in a combination that meets the regional standard(s). Outdoor unit model numbers cannot span regions unless the model of outdoor unit is compliant with all standards in all possible combinations. If a model of outdoor unit is certified below a regional standard, then it must have a unique individual model number for distribution in each region. For example:

Basic model	Individual model # (outdoor unit)	Individual model # (indoor unit)	Certified rating (SEER/EER)	Permitted?
AB12	ABC**#**-***	SO123	14.5/12.0	NO.
AB12	ABC**#**-***	SW123	15.0/12.8	
AB12	ABC**#**-***	N123	13.9/11.7	
CD13	CDESO**-*#*	SO123	14.5/12.0	YES.
CD13	CDESW**-*#*	SW123	15.0/12.8	
CD13	CDEN***-*#*	N123	13.9/11.7	
EF12	EFCS**#**-***	SO123	14.5/12.2	YES.
EF12	EFCS**#**-***	SW123	14.6/12.4	
EF12	EFCN**#**-***	N123	13.9/11.7	

5. Certification Reports

To maximize test repeatability and reproducibility for assessment and enforcement testing, DOE proposes to amend the certification reporting requirements.

DOE proposes to clarify what basic model number and individual model numbers must be reported for central air conditioners and heat pumps:

Equipment type	Basic model number	Individual model number(s)		
		1	2	3
Single Package	Number unique to the basic model.	Package	N/A	N/A.
Split System (rated by OUM)	Number unique to the basic model.	Outdoor Unit	Indoor Unit(s)	Air Mover (or N/A if rating coil-only system or fan is part of indoor unit model number).

Equipment type	Basic model number	Individual model number(s)		
		1	2	3
Outdoor Unit Only	Number unique to the basic model.	Outdoor Unit	N/A	N/A.
Split-System or SDHV (rated by ICM).	Number unique to the basic model.	Outdoor Unit	Indoor Unit(s)	N/A.

Each basic model number must be unique in some way so that all individual models or combinations within the same basic model can be identified.

DOE also proposes to require product-specific information at 10 CFR 429.16(c)(4) that is not public and will not be displayed in DOE's database. Several proposed requirements are addressed in the remainder of this notice in response to comments on specific issues or in relation to test procedure changes. In addition, several other requirements are discussed in this section.

In order for DOE to replicate the test setup for its assessment tests, DOE proposes that manufacturers that wish to certify multi-split, multiple-circuit, and single-zone-multiple-coil systems report the number of indoor units tested with the outdoor unit, the nominal cooling capacity of each indoor unit and outdoor unit, and the indoor units that are not providing heating or cooling for part-load tests. Manufacturers that wish to certify systems that operate with multiple indoor fans within a single indoor unit shall report the number of indoor fans; the nominal cooling capacity of the indoor unit and outdoor unit; which fan(s) are operating to attain the full-load air volume rate when controls limit the simultaneous operation of all fans within the single indoor unit; and the allocation of the full-load air volume rate to each operational fan when different capacity blowers are connected to the common duct.

Similarly, DOE proposes that for those models of indoor units designed for both horizontal and vertical installation or for both up-flow and down-flow vertical installations, the orientation used during certification testing shall be included on the certification test reports.

DOE also proposes that the maximum time between defrosts as allowed by the controls be included on the certification test reports. For units with time-adaptive defrost control, the frosting interval used during the Frost Accumulation tests and the associated procedure for manually initiating defrost at the specified time, if applicable, should also be included on the certification test reports.

DOE also proposes that for variable-speed units, the compressor frequency set points and the required dip switch/control settings for step or variable components should be included. For variable-speed heat pumps, DOE proposes that manufacturers report whether the unit controls restrict use of minimum compressor speed operation for some range of operating ambient conditions, whether the unit controls restrict use of maximum compressor speed operation for any ambient temperatures below 17 °F, and whether the optional $H4_2$ low temperature test was used to characterize performance at temperatures below 17 °F.

Finally, DOE proposes that manufactures report air volume rates and airflow-control settings.

DOE recognizes that additional reporting requirements in certification test reports increases reporting burden because manufacturers must spend additional time to add such content to the report. However, DOE believes that a knowledgeable person in the field would not find the additional information difficult to provide and could do so in a reasonable amount of time. Thus, DOE does not believe that the added reporting requirements are significantly burdensome to warrant excluding them. DOE requests comment on this issue.

6. Represented Values

DOE proposes to make several additions to the represented value requirements in 10 CFR 429.16. First, DOE proposes to add a requirement that the represented value of cooling capacity, heating capacity, and sensible heat ratio (SHR) shall be the mean of the values measured for the sample. Second, DOE proposes to move the provisions currently in 10 CFR 430.23 regarding calculations of various measures of energy efficiency and consumption for central air conditioners to 10 CFR 429.16. Specifically, while Part 430 would refer to the test procedure appendix and section therein to use for each metric and the rounding requirements for test results of individual units, Part 429 would refer to how to calculate annual operating cost for the sample based on represented values of cooling capacity and SEER, and how to round the represented values based on the sample for other measures of energy efficiency and consumption. DOE proposes minor changes to the calculations of annual operating cost to address changes proposed in Appendix M and M1. Table III.3 shows the proposed rounding requirements for each section. DOE requests comment on these values.

TABLE III.3—ROUNDING PROPOSALS

Measure	10 CFR 430.23 (one unit)	10 CFR 429.16 (sample)
Cooling capacity/heating capacity:		
<20,000 Btu/h	nearest 50 Btu/h	nearest 100 Btu/h.
≥20,000 Btu/h and <38,000 Btu/h	nearest 100 Btu/h	nearest 200 Btu/h.
≥38,000 Btu/h and <65,000 Btu/h	nearest 250 Btu/h	nearest 500 Btu/h
Annual operating cost	N/A	nearest dollar per year.
EER/SEER/HSPF/APF	nearest 0.025	nearest 0.05.
Off-mode power consumption	nearest 0.5 watt	nearest watt.
Sensible heat ratio	nearest 0.5%	nearest percent (%).

7. Product-Specific Enforcement Provisions

DOE proposes to verify during assessment or enforcement testing the cooling capacity certified for each basic model or individual combination. DOE proposes to measure the cooling capacity of each tested unit pursuant to the test requirements of 10 CFR part 430. The results of the measurement(s) will be compared to the value of cooling capacity certified by the manufacturer. If the measurement is within five percent of the certified cooling capacity, DOE will use the certified cooling capacity as the basis for determining SEER. Otherwise, DOE will use the measured cooling capacity as the basis for determining SEER.

DOE also proposes to require manufacturers to report the cyclic degradation coefficient (C_D) value used to determine efficiency ratings. In this proposal, DOE would run C_D testing as part of any assessment or verification testing, except when testing an outdoor unit with no match. If the measurement is 0.02 or more greater than the certified value, DOE would use the measurement as the basis for calculation of SEER or HSPF. Otherwise, DOE would use the certified value. For models of outdoor units with no match, DOE would always use the default value.

B. Alternative Efficiency Determination Methods

1. General Background

For certain consumer products and commercial equipment, DOE's existing regulations allow the use of an alternative efficiency determination method (AEDM) or alternative rating method (ARM), in lieu of actual testing, to estimate the ratings of energy consumption or efficiency of basic models by simulating their energy consumption or efficiency at the test conditions required by the applicable DOE test procedure. The simulation method permitted by DOE for use in rating split-system central air conditioners and heat pumps, in accordance with 10 CFR 429.70(e), is referred to as an ARM. In contrast to an AEDM, an ARM must be approved by DOE prior to its use.

The simulation methods represented by AEDMs or ARMs are computer modeling or mathematical tools that predict the performance of non-tested individual or basic models. They are derived from mathematical models and engineering principles that govern the energy efficiency and energy consumption of a particular basic model of covered product based on its design characteristics. (In the context of this discussion, the term ''covered product'' applies both to consumer products and commercial and industrial equipment that are covered under EPCA.) These computer modeling and mathematical tools can provide a relatively straightforward means to predict the energy usage or efficiency characteristics of an individual or basic model of a given covered product and reduce the burden and cost associated with testing certain covered products that are inherently difficult or expensive to test. When properly developed, they can predict the performance of a product accurately enough to be statistically representative under DOE's sampling requirements.

On April 18, 2011, DOE published a Request for Information (AEDM RFI) in the **Federal Register**. 76 FR 21673. Through the AEDM RFI, DOE requested suggestions, comments, and information relating to the Department's intent to expand and revise its existing AEDM and ARM requirements for consumer products and commercial and industrial equipment covered under EPCA. In response to comments it received on the AEDM RFI, DOE published a Notice of Proposed Rulemaking (AEDM NOPR) in the **Federal Register** on May 31, 2012. 77 FR 32038. DOE also held a public meeting on June 5, 2012, to present proposals in the AEDM NOPR and to receive comments from stakeholders. In the AEDM NOPR, DOE proposed the elimination of ARMs, and the expansion of AEDM applicability to those products for which DOE allowed the use of an ARM (*i.e.,* split-system central air conditioners and heat pumps). 77 FR at 32055. Furthermore, DOE proposed a number of requirements that manufacturers must meet in order to use an AEDM as well as a method that DOE would employ to determine if an AEDM was used appropriately along with specific consequences for misuse of an AEDM. 77 FR at 32055–56.

The purpose of the AEDM rulemaking was to establish a uniform, systematic, and fair approach to the use of modeling techniques that would enable DOE to ensure that products in the marketplace are correctly rated—irrespective of whether they are rated based on physical testing or modeling—without unnecessarily burdening regulated entities. DOE solicited suggestions, comments, and information related to its proposal and accepted written comments on the AEDM NOPR through July 2, 2012. DOE subsequently formed a working group through the Appliance Standards and Rulemaking Federal Advisory Committee (ASRAC) (see the Notice of Intent To Form the Commercial HVAC, WH, and Refrigeration Certification Working Group and Solicit Nominations To Negotiate Commercial Certification Requirements for Commercial HVAC, WH, and Refrigeration Equipment, published on March, 12, 2013, 78 FR 15653), which addressed revisions to the AEDM requirements for commercial and industrial equipment covered by EPCA and resulted in the subsequent publishing of a SNOPR on October 22, 2013 (78 FR 62472) and a final rule on December 31, 2013 (78 FR 79579). In the final rule, DOE made, among others changes, revisions to pre-approval requirements, validation requirements, and DOE verification testing requirements for the AEDM process for commercial HVAC equipment.

In this notice, DOE proposes modifications to the central air conditioners and heat pump AEDM requirements proposed in the AEDM NOPR with consideration of the comments received on the AEDM NOPR specific to these products, as well as the requirements implemented for commercial HVAC equipment in the December 2013 AEDM final rule.

2. Terminology

In the AEDM NOPR, DOE proposed to eliminate the term ''alternate rating method'' (ARM) and instead use the term ''alternative efficiency determination method'' (AEDM) to refer to any modeling technique used to rate and certify covered products. 77 FR 32038, 32040 (May 31, 2012). DOE proposed to refer to any technique used to model product performance as an AEDM, but recognized that there are product-specific considerations that should be accounted for in the development of an AEDM and thus, in the proposed methodology for validating product-specific AEDMs. *Id.*

DOE received a number of comments in response to its proposal to solely apply the term AEDM to any modeling technique used to rate and certify covered products. Bradford White Corporation (Bradford White), United Technologies Climate, Controls & Security and ITS Carrier (UTC/Carrier), and Nordyne, LLC (Nordyne) agreed with DOE that one term should be used. (Docket No. EERE–2011–BT–TP–0024, Bradford White, No. 38 at p. 1; UTC/Carrier, No. 56 at p. 1; Nordyne, No. 55 at p. 1) [8] AAON, Inc. (AAON) supported

[8] Unless otherwise specified, further references in this section (section III.B) to comments received by DOE are to those associated with the AEDM rulemaking (Docket No. EERE–2011–BT–TP–0024). References to the public meeting are to the June 5, 2012 public meeting on the AEDM NOPR, the transcript of which is in the AEDM rulemaking docket.

DOE's proposal to combine requirements for ARMs and AEDMs, but did not differentiate between the terminology and the methodological changes proposed. (AAON, No. 40 at p. 2) DOE also received a number of comments, both written and at the public meeting, regarding the differences in ARM and AEDM methodology. Those comments are discussed in section III.B.3 of this document. In addition, DOE received numerous comments regarding the validation of AEDMs for different product types, which are discussed in section III.B.4 of this document.

In response to comments received, DOE is continuing to propose the use of one term, AEDM, to refer to all modeling techniques used to develop certified ratings of covered products. DOE believes that since the two methods are conceptually similar, the use of one term is appropriate. DOE would like to clarify that the use of one term to refer to all modeling techniques used to develop certified ratings of covered products and equipment does not indicate a uniform process or requirements for their use across all covered products, nor does it imply that DOE will not include any of the current ARM provisions as part of the proposed AEDM provisions. Further, similar to the differences between AEDMs for distribution transformers and commercial HVAC products, DOE proposes validation requirements that will account for the differences between HVAC products and other covered equipment.

3. Elimination of the Pre-Approval Requirement

Under current regulations, ARMs used by manufacturers of split-system central air conditioners and central heat pumps must be approved by the Department before use. (10 CFR 429.70(e)(2)) Manufacturers who elect to use an ARM to rate untested basic models pursuant to 10 CFR 429.16(a)(2)(ii)(B)(1) must, among other requirements, submit to the Department full documentation of the rating method including a description of the methodology, complete test data on four mixed systems per each ARM, and product information on each indoor and outdoor unit of those systems. Furthermore, manufacturers are not permitted to use the ARM as a rating tool prior to receiving Departmental approval.

In the AEDM RFI, DOE requested comment on the necessity of a pre-approval requirement for AEDMs and/or ARMs. 76 FR 21673, 21674 (April 18, 2011). Based on the comments received in response to the AEDM RFI, DOE perceived no benefit in the additional burden imposed by a pre-approval requirement and that a pre-approval process could cause time-to-market delays. Pursuant to those comments, DOE proposed in the AEDM NOPR to eliminate the pre-approval process currently in place for central air conditioner and heat pump ARMs. 77 FR 32038, 32040–41 (May 31, 2012). DOE believed that this would reduce the burden currently placed on manufacturers by eliminating the time-to-market delays caused by completing the necessary request for approval before bringing products to market. Furthermore, DOE believed that elimination of the pre-approval requirement would promote innovation because an ARM would not need to be approved or re-approved to account for any changes in technology. *Id.*

In the AEDM NOPR, DOE sought comment regarding its proposal to eliminate the pre-approval requirement for ARMs for central air conditioners and heat pumps and received mixed responses. Modine Manufacturing Corporation (Modine) supported DOE's proposal to eliminate the pre-approval requirement. (Modine, No. 42 at p. 1) Lennox International, Inc. (Lennox) and Unico, Inc. (Unico), however, suggested that removal of the pre-approval requirement could lead to incorrect ratings and unfair competition in the marketplace, which could negatively impact consumers. (Lennox, No. 46 at p. 2; Unico, No. 54 at p. 2) Furthermore, Johnson Controls, Inc. (JCI) commented that it was particularly important that manufacturers continue to be allowed to use pre-approved ARMs because the new AEDM provisions, by eliminating pre-approval, introduce regulatory risk that is not present under current ARM requirements. (JCI, No. 66 at pp. 2)

Other interested parties specifically recommended that participation in a voluntary industry certification program (VICP),[9] or review of an AEDM or ARM by a qualified engineer, could reduce or eliminate the need for pre-approval. AHRI, Rheem Manufacturing Company (Rheem), Goodman Global, Inc. (Goodman), and Unico suggested that DOE should consider pre-approval for manufacturers not participating in a VICP, and that at a minimum, review by a professional engineer should be required. (AHRI, No. 61 at p. 2; Rheem, No. 59 at p. 2; Goodman, No. 53 at p. 1; Unico, No. 54 at p. 5) Likewise, Lennox agreed that if DOE does not maintain pre-approval in general, it could still require pre-approval for those who do not participate in a VICP . (Lennox, No. 46 at pp. 2 and 4) Lennox and Rheem commented that a pre-approval requirement for manufacturers who do not participate in a VICP could protect consumers from unsubstantiated ratings. (Rheem, No. 59 at p. 2; Lennox, No. 46 at p. 2)

DOE does not agree with JCI's suggestion that the elimination of pre-approval could create additional burden for manufacturers in cases where they fail to meet certified ratings and are subsequently required to re-substantiate their AEDM. DOE also does not agree with Rheem Lennox, and Unico who claim that the elimination of pre-approval will lead to incorrect ratings in the marketplace or create unfair competition. Pre-approval of an ARM that is used to certify a basic model rating does not mean that the basic model is correctly rated. Products that are certified using an approved ARM are subject to the same assessment testing and enforcement actions as those products certified through testing and/or use of an AEDM. Further, DOE currently has the authority to review approved ARMs at any time, including review of documentation of tests used to support the ARM. DOE may also test products that were certified using an ARM to determine compliance with the applicable sampling provisions, as well as with federal standards. Should DOE determine that products were incorrectly rated, DOE may require that the ARM is no longer used. Similarly, AEDMs used to certify ratings are subject to review at any time, as well as the potential for suspension should DOE determine that products were incorrectly rated. Additionally, as discussed in section III.A.3.a, each basic model must have at least one rating determined through testing; no basic model can be rated solely using an AEDM, which reduces the likelihood of significant error. Finally, use of a pre-approved ARM does not insulate a manufacturer from responsibility for the accuracy of their ratings, and the misconception that it does presents another reason to eliminate DOE review. Most manufacturers have not updated their ARMs and submitted the revised ARM for DOE review as required by regulation since prior to the last standards update and, thus, are effectively using unapproved or outdated ARMs currently. For these reasons, it is DOE's view that the elimination of the pre-approval process would not have a substantive

[9] A Voluntary Industry Certification Program, or VICP, is an independent, third-party program that conducts ongoing verification testing of members' products.

detrimental effect on the accuracy of a manufacturer's ratings, will improve manufacturers' ability to introduce new products into the marketplace, and will not represent a significant change from the status quo.

For the forgoing reasons, in this SNOPR, DOE proposes to eliminate the pre-approval process for ARMs for split-system central air conditioners and heat pumps. As stated in the AEDM NOPR, DOE believes that this will reduce time-to-market delays, facilitate innovation, and eliminate the time required to complete the approval process. Furthermore, DOE emphasizes that the Department's treatment of products that are currently rated and certified with the use of an ARM does not differ from its treatment of products currently rated and certified using an AEDM, except for the pre-approval requirement. (See for example 10 CFR 429.70(c).)

In addition, DOE proposes that manufacturers may only apply an AEDM if it (1) is derived from a mathematical model that estimates performance as measured by the applicable DOE test procedure; and (2) has been validated with individual combinations that meet current Federal energy conservation standards (as discussed in the next section). Furthermore, DOE proposes records retention requirements and additional manufacturer requirements to permit DOE to audit AEDMs through simulations, review of data and analyses, and/or certification testing.

4. AEDM Validation

In the AEDM NOPR, DOE proposed product-specific AEDM validation requirements meant to reduce confusion and allow for easier development and utilization of AEDMs by manufacturers. 77 FR 32044–32045. The proposed validation requirements applicable to central air conditioner and heat pump products would have required manufacturers to:

a. Test a minimum of five basic models, including at least one basic model from each product class to which the AEDM would be applied.

b. Test the smallest and largest capacity basic models from the product class with the highest sales volume.

c. Test the basic model with the highest sales volume from the previous year, or the basic model which is expected to have the highest sales volume for newly introduced basic models.

d. Validate only with test data that meets applicable Federal energy conservation standards and was derived using applicable DOE testing procedures.

In response to these proposed validation requirements, DOE received a number of comments from stakeholders addressing specific products covered by the AEDM rule. Comments applicable to the proposed requirements for central air conditioner and heat pump products are discussed in the following sections.

a. Number of Basic Models From a Product Class Necessary To Validate an AEDM

Commenter responses with regard to the minimum sample size of one unit each of five different basic models were mixed, with some commenters agreeing with DOE's proposal and some offering alternative sample sizes. Both AAON and Goodman agreed with DOE's proposal that a minimum of one unit each of five basic models be tested to validate the AEDM. (AAON, No. 40 at p. 6; Goodman, No. 53 at p. 2) AHRI, however, commented that it was not realistic for a manufacturer who produces two basic models, for example, to be required to validate an AEDM based on a minimum sample of five units of the same two basic models. (AHRI, Public Meeting Transcript, No. 69 at p. 154) Furthermore, AHRI stated that it is disproportionately burdensome to require testing of at least five basic models for small manufacturers who manufacture or wish to use an AEDM for only a few basic models compared to manufacturers who offer many basic models and many product classes. AHRI recommended that DOE require testing of only 3 basic models if the AEDM is to be applied to 15 or fewer basic models. (AHRI No. 61 at p. 3) United Cool Air agreed with AHRI's concerns and stated that to obtain data that are statistically robust enough to meet the validation requirements, testing of at least two to five units of many basic models would be necessary, which may be too burdensome for built-to-order and small manufacturers. This would be particularly burdensome in cases where models used for testing cannot be sold. (United Cool Air, No. 51 at pp. 7, 10, and 11) Acknowledging the amount of work and complex testing required for validation of an AEDM, Zero Zone, Inc. (Zero Zone) noted that it would be difficult for small manufacturers to comply. Zero Zone recommended that small manufacturers could be exempt or have a different sample size requirement. (Zero Zone, Public Meeting Transcript, No. 69 at p. 65)

Other stakeholders commented on the validation requirements for specific products. JCI stated that testing of five units is unnecessarily burdensome and suggested that testing a minimum of three units would be sufficient to validate HVAC AEDMs. (JCI, No. 66 at p. 6) First Co. stated that DOE's proposed requirements would unreasonably burden small manufacturers, especially independent coil manufacturers because they would not have knowledge of which condensing unit model is expected to have the highest sales volume in the coming year. First Co. stated that this proposed requirement is unnecessary and should be eliminated given that the proposed validation requirements already include testing of the smallest and largest capacity basic model from the product class with the highest sales volume, and that the current minimum number of tests required for obtaining ARM approval is four. (First Co., No. 45 at p. 2) JCI agreed with First Co., stating that the proposal would create an overrepresentation of the highest sales volume product class because the highest sales volume basic model is most likely from that product class, and along with the requirement to test the smallest and largest capacity basic model from that product class, would require testing of three basic models from the highest sales volume product class. (JCI, No. 66 at p. 7) Goodman, on the other hand, stated that an additional test beyond the currently required four tests would not cause significant burden. (Goodman, No. 53 at p. 2)

DOE notes that in its proposed revisions to the determination of certified ratings for central air conditioners and heat pumps (discussed in section III.A.3), manufacturers must test each basic model; specifically for split-system air conditioners and heat pumps, OUMs must test each model of outdoor unit with at least one model of indoor unit (highest sales volume), and ICMs must test each model of indoor unit with at least one model of outdoor unit (lowest SEER). Manufacturers would only be able to use AEDMs for other individual combinations within the same basic model—in other words, other combinations of models of indoor units with the same model of outdoor unit. DOE does not seek to require additional testing to validate an AEDM beyond what is proposed under 10 CFR 429.16(a)(1)(ii). Therefore, the testing burden required to validate an AEDM would depend on the number of basic models each manufacturer must rate. Furthermore, because ICMs must test each model of indoor unit with the lowest-SEER model of outdoor unit with which it is paired, First Co.'s concerns related to predicting the highest sales volume model would no longer be relevant. DOE requests comment on its proposal related to the testing requirements for validation of an AEDM.

Regarding the proposed requirement to test a basic model from each applicable product class for HVAC products, Goodman believes that the current definition of ''product class'' does not address the specific issues raised by split-system central air conditioners and heat pumps, which consist of separate indoor and outdoor coils that only function as intended when paired with one another to form a unitary split-system central air conditioner or heat pump. Hence, Goodman suggested that DOE consider the following product types to constitute individual validation classes: Split-system air conditioners, split-system heat pumps, single-package air conditioners, and single-package heat pumps. (Goodman, No. 53 at p. 4) UTC/Carrier proposed separate validation classes for the categories mentioned by Goodman, but also proposed that central air conditioners and heat pumps should include distinct validation classes for space-constrained air conditioners and space-constrained heat pumps. (UTC/Carrier, No. 56 at p. 2) United Cool Air stated that DOE did not properly address classification of space-constrained HVAC systems. (United Cool Air, No. 51 at p. 4, 13) United Cool Air's comments align with comments from Carrier that DOE should create a separate product class for space-constrained equipment.

In response, DOE notes that the proposed testing requirements in 429.16 require testing at least one individual model/combination within each basic model. Therefore, by default manufacturers would be testing all basic models from each product class in which they manufacture units.

b. Selection of Capacity Variations of a Basic Model for Validating an AEDM

Regarding selection of basic models for validating an AEDM, both Nordyne and Goodman agreed with DOE's proposal that the basic models selected for validating an AEDM must include the smallest capacity basic model as well as the largest capacity basic model (or a basic model within 25 percent of the largest capacity). (Nordyne, No. 55 at p. 2; Goodman, No. 53 at p. 2) Rheem, however, disagreed and stated that the requirement to test the smallest and largest capacity basic model was too restrictive and does not account for outliers or differences in technology across product classes. (Rheem, No. 59 at p. 4) Furthermore, Lennox noted that the manufacturer is most suited to determine which models should be used for validation and that requirements for particular capacities do not account for variation in product design and construction. (Lennox, No. 46 at p. 4)

DOE's intention when proposing to require that a manufacturer test both the smallest and largest capacity basic models within the product class with the highest sales volume was to ensure that the AEDM could accurately predict the efficiency of those products at the extremes of a manufacturer's product line. As variations in product design and construction across all capacities should be accounted for when testing all basic models, DOE withdraws the proposal regarding selecting the smallest and largest capacity basic models from the product class with the highest sales volume for testing for validation of the AEDM. DOE notes that in the proposed revisions to the determination of certified ratings, each basic model must be tested and an AEDM can only be used to certify other individual combinations that are part of the same basic model.

c. Use of the Highest Sales Volume Basic Model for Validating an AEDM

Many interested parties recommended that DOE continue to require that split-system manufacturers test each condensing unit they manufacture with the evaporator coil that is likely to have the largest volume of retail sales (*i.e.,* the highest sales volume combination, or HSVC) because the data resulting from these test combinations are critical to independent coil manufacturers (ICMs) in determining accurate ratings for their products since they must determine their ratings based on pairings with condensing units offered by other manufacturers. AHRI stated that DOE should retain requirements for testing based on the HSVC for central air conditioners and heat pumps. (AHRI, No. 61 at p. 2) UTC/Carrier agreed that DOE should allow split-systems to retain the HSVC process, as is required by current ARM regulations. (UTC/Carrier, No. 56 at p. 1) Lennox disagreed with removing the requirement for testing based on HSVC because the current AHRI certification program and independent coil manufacturing industry depend on this requirement, and the data from HSVC test results are used by independent coil manufacturers (ICMs) as the input to their ARM. (Lennox, No. 46 at p. 4)

Unico stated that DOE should maintain the current ARM requirements for central air conditioners and heat pumps because as an indoor coil manufacturer, Unico relies on the accuracy of the ratings published by the manufacturer of the outdoor unit and decreasing the accuracy of those ratings would increase their own risk of failure. Unico stressed that it was particularly important for DOE to allow manufacturers' rating methodology to rely on curve fit data, and specifically proposed that for validating an AEDM, matched system manufacturers should test at least the highest sales volume combination for each outdoor unit. (Unico, No. 54 at pp. 2, 4, and 6) Mortex Products, Inc. (Mortex) stated that in order for ICMs to rate indoor coils accurately using the ARM, the system manufacturer's HSVC data is necessary, and if HSVC data were no longer obtained from tests, but generated using an AEDM, the accuracy of the indoor coil ratings would be affected. (Mortex, No. 58 at p. 1)

DOE recognizes the concerns of stakeholders who commented that eliminating the requirement to test the HSVC for split-system products could increase the burden on ICMs. DOE does not intend to eliminate that requirement and notes that such requirement is proposed to be retained in this notice, as discussed in section III.A.3.a. However, DOE also proposes additional requirements for ICMs that are discussed in section III.B.5. DOE also notes that the ARM provisions in the current regulations do not clearly apply to ICMs, and most ICMs do not have DOE-approved ARMs.

DOE's proposal in the AEDM NOPR required re-validation when the HSVC changes. In response, Goodman stated that for split-system CACs and HPs, testing the highest or expected highest sales volume combination basic model would be appropriate as long as DOE does not require re-validation of the AEDM if another basic model subsequently becomes the highest sales volume combination. Determination of the highest volume basic model should be based on sales data of the prior year, or sales data or forecasts of the year of the AEDM's validation. (Goodman, No. 53 at p. 3) United Cool Air was also concerned that additional testing would be required if the highest selling basic model changed. (United Cool Air, No. 51 at p. 9)

In response to the concerns of Goodman and United Cool Air regarding re-validation if the HSVC changed, DOE agrees that re-validation should not be required if test data used to validate the AEDM was based on an expected HSVC that subsequently becomes a lower sales volume model and is not proposing such a requirement in this notice. DOE agrees with Goodman that determination of the highest volume basic model should be based on sales data of the prior year, sales data or forecasts of the year of the AEDM's validation, or other similar information. Selection of the highest volume basic model should reflect a good faith effort by the manufacturer to predict the combination most likely to result in the highest volume of sales. DOE notes that it may verify compliance with this HSVC testing requirement.

d. Requirements for Test Data Used for Validation

In AEDM NOPR, DOE did not propose requirements on the test data used for validation of an AEDM because any non-testing approaches to certifying central air conditioners and heat pumps via an ARM were to be approved by DOE prior to use. 77 FR 32043. However, if DOE adopts the current proposal to remove the pre-approval requirement, certified ratings generated using an AEDM would be unreliable without other requirements to validate the AEDM against actual test data. Therefore, DOE proposes in this notice to adopt requirements on test data similar to those used for validation for commercial HVAC and water heating equipment, as published in the AEDM final rule 78 FR 79579, 79584 (Dec. 31, 2013). Specifically, (1) for energy-efficiency metrics, the predicted efficiency using the AEDM may not be more than 3 percent greater than that determined through testing; (2) for energy consumption metrics, the predicted efficiency using the AEDM may not be more than 3 percent less than that determined through testing; and (3) the predicted efficiency or consumption for each individual combination calculated using the AEDM must comply with the applicable Federal energy conservation standard. Furthermore, the test results used to validate the AEDM must meet or exceed the applicable Federal standards, and the test must have been performed in accordance with the applicable DOE test procedure. If DOE has ordered the use of an alternative test method for a particular basic model through the issuance of a waiver, that is the applicable test procedure.

DOE proposes a validation tolerance of 3 percent because the variability in a manufacturer's lab and within a basic model should be more limited than lab-to-lab variability. DOE proposes tolerances for verification testing of 5 percent to account for added lab-to-lab variability.

5. Requirements for Independent Coil Manufacturers

In the AEDM NOPR, DOE did not propose a statistical sampling requirement for independent coil manufacturers (ICMs) that would be distinct from the sampling required to validate an AEDM for HVAC products. 77 FR at 32043. In response, Unico commented that ICMs should test coils of each fin-pattern, varying the number of rows, fin density, tube type, circuiting, and frontal area. (Unico, No. 54 at p. 4) Mortex stated that their ARMs are based on data from a ''matched system'' tested by an OUM. Mortex uses an ARM to simulate the performance of their own coil in a matched system by substituting the geometry of the indoor evaporator coil used by the manufacturer of the condensing unit with the geometry of their own coil. (Mortex, No. 58 at p. 1)

While DOE understands that ICMs currently use ratings from OUMs to predict the efficiency of their coil models, as discussed in section III.A.3.d, DOE is now proposing to require that ICMs test each of model of indoor units (*i.e.,* basic models) with the least efficient model of outdoor unit with which it will be paired. In order to validate an AEDM for split-systems rated by ICMs for other individual combinations within each basic model, DOE also proposes that ICMs must use the individual combinations the ICMs would be required to test under the proposed text in 10 CFR 429.16. DOE seeks comment on this proposal.

In regard to Unico's suggestion to test indoor units with coils of varying fin-patterns, DOE refers stakeholders to the definition of a basic model in section III.A.1, and particularly what constitutes the same model of indoor unit. DOE notes that the manner in which manufacturers apply the basic model provisions would impact what models of indoor units are required for testing.

6. AEDM Verification Testing

DOE may randomly select and test a single unit of a basic model pursuant to 10 CFR 429.104. This authority extends to all DOE covered products, including those certified using an AEDM. In the AEDM NOPR, DOE clarified that a selected unit would be tested using the applicable DOE test procedure at an independent, third-party laboratory accredited to the International Organization for Standardization (ISO)/International Electrotechnical Commission (IEC), ''General requirements for the competence of testing and calibration laboratories,'' ISO/IEC 17025:2005E. 77 FR 32038, 32057 (May 31, 2012).

In this notice, DOE proposes further verification testing methods. Specifically, DOE proposes that verification testing conducted by the DOE will be (1) on a retail unit or a unit provided by the manufacturer if a retail unit is not available, (2) at an independent, third-party testing facility or a manufacturer's facility upon DOE's request if the former is not capable of testing such a unit, and (3) conducted with no communication between the lab and the manufacturer without DOE authorization.

DOE also proposes clarification of requirements for determining that a model does not meet its certified rating, as proposed in the AEDM NOPR. Specifically, DOE proposes that an individual combination would be considered as having not met its certified rating if, even after applying the five percent tolerance between the test results and the rating as specified in the proposed 10 CFR 429.70(e)(5)(vi), the test results indicate the individual combination being tested is less efficient or consumes more energy than indicated by its certified rating. DOE notes that this approach will not penalize manufacturers for applying conservative ratings to their products. That is, if the test results indicate that the individual combination being tested is *more* efficient or consumes *less* energy than indicated by its certified rating, DOE would consider that individual combination to meet its certified rating. DOE seeks comment on whether this is a reasonable approach to identify an individual combination's failure to meet its certified rating.

In the AEDM NOPR, DOE also proposed the actions DOE would take in response to individual models that fail to meet their certified ratings. 77 FR at 32056. Many stakeholders submitted comments suggesting that DOE should determine the cause of the test failure prior to taking any additional action. UTC/Carrier commented that failure of a single unit test result could be a result of a defective unit and further urged DOE to define a process to contest test results from a third party lab. (UTC/Carrier, No. 56 at p. 2) JCI had a similar concern regarding potential errors in test set-up and proposed that DOE should work with the manufacturer to determine the root cause of the failure, performing additional testing if necessary. (JCI, No. 66 at p. 8) Rheem agreed with JCI that DOE should work with the manufacturer to determine whether the root cause is associated with test variability, AEDM model inaccuracy, or manufacturing variability. Rheem added that DOE should clarify what constitutes a ''failure'' as well as develop a detailed plan for selection, testing, evaluation, manufacturer notification, and resolution. (Rheem, No. 59 at p. 4) Lennox also agreed that DOE should not immediately require modification of an

AEDM without first finding the cause of the failure. (Lennox, No. 46 at pp. 4–5) Additionally, Ingersoll Rand requested that DOE allow for a dialogue with the manufacturer to ensure that the sample unit was not defective and that the test was set up correctly. (Ingersoll Rand, Public Meeting Transcript, No. 69 at p. 187) AHRI agreed that it would be valuable to specify particular steps manufacturers and DOE must take in the case of a test failure and incorporate a defective sample provision, and recommended that DOE provide data, a failure report, and other necessary information to the manufacturer for proper analysis of the test failure. (AHRI, No. 61 at pp. 6–7)

Unico and manufacturers of products other than HVAC suggested that DOE should not only share the data with the manufacturer, but also allow the manufacturer to review or witness testing done by a lab. This would allow for better understanding of potential discrepancies in test results and ensure that failure was not merely a result of variation in test set-up. (Unico, No. 54 at p. 4) AHRI and UTC/Carrier suggested that manufacturers should be allowed to participate in commissioning of their equipment prior to the assessment test since proper set-up is critical. AHRI added that manufacturers should have an opportunity to repair a unit, if defective, while it is in the assessment lab. (AHRI, No. 61 at pp. 6–7; Carrier, Public Meeting Transcript, No. 69 at p. 218) Further, UTC/Carrier urged DOE to specify an appeals process for tests that a manufacturer believes were tested with improper test set-up. (UTC/Carrier, Public Meeting Transcript, No. 69 at p. 195; UTC/Carrier, No. 56 at p. 3)

DOE agrees that determining the root cause of the failure to meet certified ratings is important; however, DOE stresses that this would be the manufacturer's responsibility. DOE is aware that in order to determine the cause of the failure, the manufacturer will need to review the data from DOE's testing. DOE therefore proposes that when an individual combination fails to meet certified ratings, DOE will provide to the manufacturer a test report that includes a description of test set-up, test conditions, and test results. DOE will provide the manufacturer with an opportunity to respond to the lab report by presenting all claims regarding testing validity, and if the manufacturer was not on-site for initial set-up, to purchase an additional unit from retail to test following the requirements in 429.110(a)(3). This process is designed to provide manufacturers the opportunity to raise concerns about the test set-up, taking into account various comments from stakeholders. DOE will consider any response offered by the manufacturer within a designated time frame before deciding upon the validity of the test results. Only after following these steps will the Department make a determination that the rating for the basic model is invalid and require the manufacturer to take subsequent action, as described in section III.B.7.

7. Failure To Meet Certified Ratings

In the AEDM NOPR, DOE proposed a method of determining whether a model meets its certified rating whereby the assessment test result would be compared to the certified rating for that model. If the test result was not within the tolerance in the proposed section 429.70(c), the model would be considered as having not met its certified rating. In this case DOE proposed to require that manufacturers re-validate the AEDM that was used to certify the product within 30 days of receiving the test report from the Department. DOE also proposed to require that manufacturers incorporate DOE's test data into the re-validation of the AEDM. If after inclusion of DOE's test data and re-validation, the AEDM-certified ratings change for any models, then the manufacturer would be required to re-rate and re-certify those models. The manufacturer would not be required to perform additional testing in this re-validation process unless the manufacturer finds it necessary in order to meet the requirements enumerated in the proposed section 429.70. 77 FR 32028, 32056.

A few stakeholders provided comments on the aforementioned proposals. Zero Zone commented that the failure of a single test unit to meet its certified rating should not automatically necessitate re-validation, but suggested that the manufacturer should decide on the appropriate course of action. (Zero Zone, No. 64 at p. 3) UTC/Carrier commented that DOE should not require re-validation based on a single unit's test result because the failure could be a result of a defective unit. (UTC/Carrier, No. 56 at p. 2) Lennox opposed DOE's proposal to require manufacturers to incorporate DOE test data into their AEDM if a model is determined not to meet its certified rating because they believe that DOE data may be erroneous and only the best available data should be used to validate an AEDM. (Lennox, No. 46 at p. 5) JCI stated that without additional information as to why a particular product failed a test, it is not reasonable to assume that all models rated with the AEDM must be re-rated. (JCI, No. 66 at pp. 9–10).

In consideration of the above mentioned comments, DOE proposed to allay concerns via the proposal in section III.B.6, which provides manufacturers an opportunity to review the data from DOE's testing and present claims regarding testing validity. Based on these comments, DOE also proposes an exception to re-validation of the AEDM in cases where the determination of an invalid rating for that basic model is the first for models certified with an AEDM. In such cases, the manufacturer must conduct additional testing and re-rate and re-certify the individual combinations within the basic model that were improperly rated using the AEDM.

DOE also proposes that if DOE has determined that a manufacturer made invalid ratings on individual combinations within two or more basic models rated using the manufacturer's AEDM within a 24 month period, the manufacturer must test the least efficient and most efficient combination within each basic model in addition to the combination specified in 429.16(a)(1)(ii). The twenty-four month period begins with a DOE determination that a rating is invalid through the process outlined above. If DOE has determined that a manufacturer made invalid ratings on more than four basic models rated using the manufacturer's AEDM within a 24-month period, the manufacturer may no longer use an AEDM.

Finally, DOE proposes additional requirements for manufacturers to regain the privilege of using an AEDM, including identifying the cause(s) for failure, taking corrective action, performing six new tests per basic model, and obtaining DOE authorization.

DOE created this proposal under the expectation that each manufacturer will use only a single AEDM for all central air conditioner and central air conditioning heat pumps. DOE requests comment on whether manufacturers would typically apply more than one AEDM and if they would, the differences between such AEDMs.

8. Action Following a Determination of Noncompliance

In the AEDM NOPR, DOE explained that if a model failed to meet the applicable Federal energy conservation standard during assessment testing, DOE may pursue enforcement testing pursuant to 10 CFR 429.110. DOE also stated that if an individual model was determined to be noncompliant, then all other individual models within that basic model would be considered noncompliant. This is consistent with

DOE's approach for all covered products. All other basic models rated with the AEDM would be unaffected pending additional investigation. Furthermore, DOE proposed that if a noncompliant model was used for validation of an AEDM, the AEDM must be re-validated within 30 days of notification, pursuant to requirements enumerated in 10 CFR 429.70. Notably, DOE did not propose that manufacturers must re-test basic models used to validate an AEDM when there is no determination of noncompliance. 77 FR 32056.

In response, JCI agreed that all AEDM-rated models should not be disqualified if one model is found out of compliance. (JCI, No. 66 at p. 9)

DOE reiterates that for central air conditioners and central air conditioning heat pumps, if an individual combination was determined to be noncompliant, then all other individual combinations within that basic model would be considered noncompliant. DOE is not proposing in this SNOPR that other basic models rated with the AEDM be considered non-compliant. However, DOE notes that an AEDM must be validated using test data for individual combinations that meet the current Federal energy conservation standards. Therefore, if a noncompliant model was used for validation of an AEDM, manufacturers would be expected to re-validate the AEDM in order to continue using it. The requirements for additional testing based on invalid ratings, as discussed in the previous section, may also apply.

C. Waiver Procedures

10 CFR 430.27(l) requires DOE to publish in the **Federal Register** a notice of proposed rulemaking to amend its regulations so as to eliminate any need for the continuation of waivers and as soon thereafter as practicable, DOE will publish a final rule in the **Federal Register**. As of the issuance date of this notice, a total of four waivers (and one interim waiver) for central air conditioner and heat pump products are active. They are detailed in the Table III.4, with the section reference to this notice included for discussion regarding DOE's proposed amended regulations and intention for subsequent waiver termination.

TABLE III.4—ACTIVE WAIVERS AND ACTIVE INTERIM WAIVERS

Air Conditioners and Heat Pumps, Consumer		
Scope	Decision & order	Termination
ECR International, Inc., Multi-zone Unitary Small Air Conditioners and Heat Pumps	(Petition & Interim Waiver, 78 FR 47681, 8/6/2013).	III.C.2
Daikin AC (Americas), Inc., Heat Pump & Water Heater Combination	76 FR 11438, 3/2/2011	III.C.1
Daikin AC (Americas), Inc., Heat Pump & Water Heater Combination	75 FR 34731, 6/18/2010	III.C.1
Hallowell International, Triple-Capacity Northern Heat Pumps	75 FR 6013, 2/5/2010	III.C.4
Cascade Group, LLC, Multi-blower Air-Conditioning and Heating Equipment	73 FR 50787, 8/28/2008	III.C.3

DOE notes that four waivers previously associated with both commercial equipment and consumer products, as listed in Table III.3, were terminated for consumer products as of the October 22, 2007 Final Rule (72 FR 59906, 59911) and for commercial equipment as of the May 16, 2012 Final Rule (77 FR 28928, 28936). In this SNOPR, DOE reaffirms that these waivers have been terminated for consumer products and that the products in question can be tested using the current and proposed test procedure for central air conditioners and heat pumps.

TABLE III.5—TERMINATED WAIVERS

Scope	Decision & order
Daikin U.S. Corporation, Multi-split Heat Pumps and Heat Recovery Systems	73 FR 39680, 7/10/2008.
Mitsubishi Electric and Electronics USA, Inc., Variable Refrigerant Flow Zoning Air Conditioners and Heat Pumps.	72 FR 17528, 4/9/2007.
Fujitsu General Limited, Multi-split Products	72 FR 71383, 12/17/2007.
Samsung Air Conditioning, Multi-split Products	72 FR 71387, 12/17/2007.

1. Termination of Waivers Pertaining to Air-to-Water Heat Pump Products With Integrated Domestic Water Heating

DOE has granted two waivers to Daikin Altherma for the air-to-water heat pump with integrated domestic water heating; one on June 18, 2010 and a second on March 2, 2011. 75 FR 34731 and 76 FR 11438. As described in Daikin's petitions, the Daikin Altherma system consists of an air-to-water heat pump that provides hydronic space heating and cooling as well as domestic hot water functions. It operates either as a split system with the compressor unit outdoors and the hydronic components in an indoor unit, or as a single-package configuration in which all system components are combined in a single outdoor unit. In both the single-package and the split-system configurations, the system can include a domestic hot water supply tank that is located indoors. These waivers were granted on the grounds that the existing DOE test procedure contained in Appendix M to Subpart B of 10 CFR part 430 addresses only air-to-air heat pumps and does not include any provisions to account for the operational characteristics of an air-to-water heat pump, or any central air-conditioning heat pump with an integrated domestic hot water component.

According to the definition set forth in EPCA and 10 CFR 430.2, a central air conditioner is a product, other than a packaged terminal air conditioner, which is powered by single phase electric current, air cooled, rated below 65,000 Btu per hour, not contained within the same cabinet as a furnace, the rated capacity of which is above 225,000 Btu per hour, and is a heat pump or a cooling unit only. (42 U.S.C. 6291(21)) The heat pump definition in EPCA and 10 CFR 430.2 requires that a heat pump utilize a refrigerant-to-outdoor air heat exchanger, effectively excluding heat pump products classified as air-to-water. (42 U.S.C. 6291(24)) In addition, because the definition of a central air conditioner, which also applies to heat pumps, requires products to be ''air cooled,'' products that rely exclusively on refrigerant-to-water heat exchange on the indoor side are effectively excluded from the definition of, and the existing efficiency standards for, central air conditioners and heat pumps.

Based upon the description in the waiver petitions for the Daikin Altherma air-to-water heat pumps with integrated domestic water heater, DOE has determined that these products rely exclusively on refrigerant-to-water heat exchange on the indoor side, and thus would not be subject to the central air conditioner or heat pump standards and would not be required to be tested and rated for the purpose of compliance with DOE standards for central air conditioners or heat pumps. Thus, if this interpretation is adopted, these waivers would terminate on the effective date of a notice finalizing the proposals in this notice.

2. Termination of Waivers Pertaining to Multi-Circuit Products

DOE granted ECR International (ECR) an interim waiver on August 6, 2013, for its line of Enviromaster International (EMI) products. 78 FR 47681. ECR describes in its petitions that its multi-zone air conditioners and heat pumps each comprise a single outdoor unit combined with two or more indoor units, which each comprise a refrigeration circuit, a single air handler, a single control circuit, and an expansion valve, intended for independent zone-conditioning. The outdoor unit contains one fixed-speed compressor for each refrigeration circuit; all zones utilize the same condenser fan and defrost procedures but refrigerant is not mixed among the zones. 78 FR at 47686. These products are similar to multiple-split (or multi-split) air conditioners or heat pumps, which are defined and covered by current test procedure (Appendix M to Subpart B of 10 CFR part 430). However, they are distinct from, and therefore not classified as, multi-split products due to differences in refrigerant circuitry. The separate refrigeration circuits of the ECR product line are not amenable to the test procedures for multi-split systems, specifically the procedures calling for operation at different levels of compressor speed or staging, because the individual compressors are not necessarily variable-speed. Hence, alternative procedures have been developed, as described in the interim waiver. DOE proposes to address products such as the ECR product line in the DOE test procedure. DOE also proposes to define such a product as a ''multi-circuit air conditioner or heat pump'' and provide testing requirements for such for such products at 10 CFR 429.16(a)(1)(ii)(A).

For the duration of the interim waiver period, either until 180 days after the publication of the interim waiver (the interim waiver period) or until DOE issued its determination on the petition for waiver, whichever occurred earlier, DOE granted ECR permission to use the proposed alternative test procedure to test and rate its multi-circuit products. 78 FR 47681, 47682 (Aug. 6, 2013). The requirements in the alternative test procedure comprise methods to establish air volume rate, procedures for testing, and adjustments to equations used to calculate SEER and HSPF. Following publication of the Notice of Grant of Interim Waiver, DOE received no comments regarding this alternative test procedure. After the interim waiver period, DOE did not issue a final decision and order on ECR's petition for waiver, therefore, the interim waiver will terminate upon the publication of a test procedure final rule for central air conditioners and heat pumps, and the alternative test procedure included therein shall cease from being applicable to testing and rating ECR's multi-circuit products and multi-circuit products in general, absent amendments regarding provisions for testing such products. Therefore, DOE proposes in this notice testing requirements for manufacturers who wish to certify multi-circuit products.

According to Appendix M to Subpart B of 10 CFR part 430, Section 2.4.1b, systems with multiple indoor coils are tested in a manner where each indoor unit is outfitted with an outlet plenum connecting to a common duct so that each indoor coil ultimately connects to an airflow measuring apparatus.[10] In testing a multi-circuit system in this manner, the data collection, performance measurement, and reporting is done only on the system level. ECR took issue with this, citing inadequate data accountability, and thus argued in its petition for waiver to individually test each indoor unit. *Id.* Current test procedures for systems with multiple indoor coils, however, produce ratings that are repeatable and accurate even though monitoring of all indoor units are not required by regulation, or common industry practice. DOE also notes that the common duct testing approach has been adopted by industry standards and is an accepted method for testing systems having multiple indoor units. ECR's petition did not identify specific differences between the indoor units of its new product line and the indoor units of multi-splits that would make the common-duct approach unsuitable for its products. Further, the interim waiver approach of using multiple airflow measuring devices, one for each indoor unit, represents unnecessary test burden. Therefore, DOE proposes to adopt for multi-circuit products the same common duct testing approach used for testing multi-split products.

The alternative test procedure in the interim waiver calls for separate measurement of performance for each indoor unit for each required test condition, and requires that all indoor units be operating during each of these separate measurements. The overall system performance for the given test condition is calculated by summing the capacities and power inputs measured for all of the indoor units and adding to the power input sum the average of the power measurements made for outdoor unit for the set of tests. *Id.* In contrast, DOE's current proposal involves use of the common duct to measure the full system capacity, thus allowing use of a single test for each operating condition. DOE requests comment on whether this method will yield accurate results that are representative of the true performance of these systems.

3. Termination of Waiver and Clarification of the Test Procedure Pertaining to Multi-Blower Products

On August 28, 2008, DOE published a decision and order granting Cascade Group, LLC a waiver from the Central Air Conditioner and Heat Pump Test Procedure for its line of multi-blower indoor units that may be combined with one single-speed heat pump outdoor unit, one two-capacity heat pump outdoor unit, or two separate single-speed heat pump outdoor units. 73 FR 50787, 50787–97. DOE proposed revisions to the test procedure in the June 2010 NOPR to accommodate the certification testing of such products. 75 FR 31237. NEEA responded in the subsequent public comment period, recommending DOE defer action on test procedure changes until such a product is actually being tested, certified and sold. (NEEA, No. 7 at pp. 4–5). Mitsubishi recommended DOE either use AHRI Standard 1230–2010 to rate such a product or does not amend the

[10] When the indoor units are installed in separate indoor chambers for the test, the test procedure allows common ducting to a separate airflow measuring apparatus for each indoor chamber.

test procedure to allow coverage of such a product. (Mitsubishi, No. 12 at p. 2).

DOE notes that AHRI Standard 1230–2010, which provides testing procedures for products with variable speed or multi-capacity compressors, may not be suitable for testing the subject products, which are equipped with single-speed compressors; however, the test procedure, as proposed in the June 2010 NOPR enables testing of such products. DOE therefore retains its proposal in the June 2010 NOPR to adopt that test procedure, except for the following revisions.

The proposal in the June 2010 NOPR amended Appendix M to Subpart B of 10 CFR part 430 with language in sections 3.1.4.1.1e and 3.1.4.2e that suggested that test setup information may be obtained directly from manufacturers. DOE is revising that proposal to eliminate the need for communication between third-party test laboratories and manufacturers, such that the test setup is conducted based on information found in the installation manuals included with the unit by the manufacturer. DOE is proposing that much of that information be provided to DOE as part of certification reporting. These proposed modifications regarding test setup can be found in section 3.1.4.1.1d and 3.1.4.2e of the proposed Appendix M in this notice. DOE requests comment on its proposals for multi-blower products, including whether individual adjustments of each blower are appropriate and whether external static pressures measured for individual tests may be different.

Because the proposed test procedure amendments would allow testing of Cascade Group, LLC's line of multi-blower products, DOE proposes to terminate the waiver currently in effect for those multi-blower products effective 180 days after publication of the test procedure final rule.

4. Termination of Waiver Pertaining to Triple-Capacity, Northern Heat Pump Products

On February 5, 2010, DOE granted Hallowell International a waiver from the DOE Central Air Conditioner and Heat Pump Test Procedure for its line of boosted compression heat pumps. 75 FR 6014, 6014–18. DOE proposed revisions to its test procedures in the June 2010 NOPR to accommodate the certification testing of such products. 75 FR 31223, 31238 (June 2, 2010). NEEA expressed support for DOE's proposal in the subsequent public comment period but urged DOE to ensure that the northern climate test procedure can be used by variable speed systems that can meet the appropriate test conditions, and that the procedures can accurately assess the performance of these systems relative to more conventional ones. (NEEA, No. 7 at p. 5). NEEA also urged DOE to require publishing of Region V ratings for heat pumps. Mitsubishi supported DOE's proposed changes to cover triple-capacity, northern heat pumps but requested that DOE reevaluate the testing of inverter-driven compressor systems to permit better demonstration of the system's capabilities at heating at low ambient conditions. (Mitsubishi, No. 12 at p. 3).

DOE believes that the test procedure as proposed in the June 2010 NOPR, along with the proposed revisions to the test procedure for heating tests conducted on units equipped with variable-speed compressors, as discussed in section III.H.5, would produce performance that represents an average period of use of such products. Because the proposed test procedure amendments would allow testing of Hallowell International's line of triple-capacity, northern heat pump products, DOE proposes to terminate the waiver currently in effect for those products effective 180 days after publication of the test procedure final rule.

D. Measurement of Off Mode Power Consumption

In the June 2010 NOPR, DOE proposed a first draft of testing procedures and calculations for off mode power consumption. 75 FR 31223, 31238 (June 2, 2010). In the following April 2011 SNOPR, DOE proposed a second draft, revising said testing procedures and calculations based on stakeholder-identified issues and changes to the test procedure proposals in the 2010 June NOPR and on DOE-conducted laboratory testing. 76 FR 18105, 18111 (April 1, 2011). In the October 2011 SNOPR, DOE proposed a third draft, further revising the testing procedures and calculations for off mode power consumption based primarily on stakeholder comments regarding burden of test as received during the April 2011 SNOPR comment period. 76 FR 65616, 65618–22 (Oct. 24, 2011). From the original and extended comment period of the October 2011 SNOPR DOE received stakeholder comments, which are the basis of DOE's proposed fourth draft in this notice, further revising testing procedures and calculations for off mode power consumption. None of the proposals listed in this section impact the energy conservation standard.

1. Test Temperatures

In the October 2011 SNOPR, DOE proposed to base the off mode power consumption rating ($P_{W,OFF}$) on an average of wattages *P1* and *P2,* which would be recorded at the different outdoor ambient temperatures of 82 °F and 57 °F, respectively. DOE intended that, for systems with crankcase heater controls, the measurement at the higher ambient temperature would measure the off mode contribution that was more representative of the shoulder seasons. The lower measurement was intended to represent off mode power use for an air conditioner during the heating season. 76 FR at 65621.

In response to the October 2011 SNOPR, a joint comment from Pacific Gas and Electric and Southern California Edison, hereafter referred to as the California State Investor Owned Utilities (CA IOUs), and a joint comment from the American Council for an Energy-Efficient Economy (ACEEE) and Appliance Standards Awareness Program (ASAP) expressed concern that the 57 °F test point could create a loophole wherein a crankcase heater could be designed to turn on just below 57 °F and result in an underestimation of the system's energy consumption. The off mode power consumption would be underestimated because the energy consumption of the crankcase heater would not be included in either *P1* or *P2.* (CA IOUs, No. 33 at p. 2; ACEEE and ASAP, No. 34 at p. 2) A joint comment from the Northwest Energy Efficiency Alliance (NEEA) and the Northwest Power and Conservation Council (NPCC), hereafter referred to as the Joint Efficiency Advocates, also disputed DOE's proposal to test units at two fixed temperatures and disagreed with DOE's contention that the proposed *P2* test temperature (57 °F) is sufficiently low that the crankcase heater would be energized. (Joint Efficiency Advocates, No. 35 at p. 3)

Both the CA IOUs and the Joint Efficiency Advocates proposed that DOE require manufacturers to specify the temperature at which the crankcase heater turns on and off, and then to run one off mode test 3–5 °F below the point at which the crankcase heater turns on (''on'' set point temperature) and the other off mode test 3–5 °F above the temperature at which the crankcase heater turns off (''off'' set point temperature). (CA IOUs, No. 33 at p. 2; Joint Efficiency Advocates, No. 35 at p. 3) However, the Joint Efficiency Advocates only proposed this rating method for constant wattage crankcase heaters. (Joint Efficiency Advocates, No. 35 at p. 3) The Joint Efficiency Advocates stated that two measurements are insufficient for systems that have a heater with wattage that varies according to temperature and suggested that the crankcase heater power for systems with variable wattage be tested at three temperatures. Specifically, the Joint Efficiency Advocates recommended testing at 3–5 °F below the ''on'' set point temperature, at 47 °F, and at 17 °F. (Joint Efficiency Advocates, No. 35 at p. 4) The Joint Efficiency Advocates additionally recommended that systems with temperature-controlled crankcase heaters should be tested for off mode power use when cold (*i.e.,* before the system is run). (Joint Efficiency Advocates, No. 35 at p. 4)

In the December 2011 extension notice for comments on the October 2011 SNOPR, DOE requested comment on the CA IOUs' suggestion that the test procedure should measure *P1* at a temperature that is 3–5 °F above the manufacturer's reported ''off'' set point and measure *P2* at a temperature that is 3–5 °F lower than the ''on'' set point. 76 FR 79135 (Dec. 21, 2011). The Joint Efficiency Advocates commented in support of the CA IOU proposal. (Joint Efficiency Advocates, No. 43 at p. 2) However, they also reiterated that crankcase heater power for systems with variable wattage should be tested at three temperatures, namely, 3–5 °F below the ''on'' set point temperature, 47 °F, and 17 °F. (Joint Efficiency Advocates, No. 43 at p. 2)

AHRI commented that DOE should modify the test procedure by having up to three rating temperatures, depending on the manufacturer control protocol. The first test would be conducted at 72 °F immediately after the B, C, or D test to verify whether the crankcase heater is on. The second test would be conducted at 5 °F below the temperature at which the manufacturer specifies the crankcase heater turns on. The third test would be conducted at 5 °F below the temperature at which the crankcase heater turns off and would only apply to air conditioners with crankcase heater controls that turn off the crankcase heater during winter. AHRI commented that it could accept the CA IOUs proposal to test at 3–5 °F below the heater turn-on temperature and at 3–5 °F above the heater turn-off temperature if DOE did not accept AHRI's proposal. (AHRI, No. 41 at p. 2) Goodman commented in support of AHRI's recommendation. (Goodman, No. 42 at p. 1)

Many of the commenters' recommended changes are reflected in this proposed rule. DOE proposes to require manufacturers to include in certification reports the temperatures at which the crankcase heater is designed to turn on and turn off for the heating season, if applicable. These temperatures are used in the proposed tests described in the following paragraphs.

DOE proposes to replace the off mode test at 82 °F with a test at 72±2 °F and replace the off mode test at 57 °F with a test at a temperature which is 5±2 °F below a manufacturer-specified turn-on temperature. This approach maintains the intent of the off mode power consumption rating ($P_{W,OFF}$) as a representation of the off mode power consumption for the shoulder and heating seasons, addresses AHRI's proposed modification of the test procedure, and addresses ACEEE and ASAP's concerns regarding the potential for a loophole at the 57 °F test point.

DOE does not propose to adopt an additional test point at a temperature of 17 °F, as recommended by the stakeholders; (Efficiency Advocates, No. 35 at p. 4; AHRI, No. 41 at p. 2) at a temperature 5 °F below the temperature at which the crankcase heater turns off, as recommended by AHRI; (AHRI, No. 41 at p. 2) or at a temperature 3–5 °F above the heater turn-off temperature, as recommended by the CA IOUs and the Joint Efficiency Advocates. (CA IOUs, No. 33 at p. 2; Joint Efficiency Advocates, No. 35 at p. 3) Manufacturer literature provides data on variable wattage crankcase heaters, otherwise known as self-regulating crankcase heaters, which show that power input for such heaters is a linear function of outdoor ambient temperature (*i.e.,* the input power can be represented with insignificant error as a constant times the outdoor ambient temperature plus another constant). As such, DOE maintains that two test points are adequate for characterizing the off mode power consumption for self-regulating crankcase heaters by establishing a linear fit from the two test outputs. DOE also believes that one of the two test points is adequate for characterizing the off mode power consumption for constant wattage crankcase. DOE does not believe that the additional accuracy gained from additional test points merits the additional test burden. The modifications in this proposal should help to minimize the test burden while maintaining the accuracy of off mode power ratings. DOE requests comments on these proposals.

2. Calculation and Weighting of P1 and P2

Stakeholders submitted comments discussing the most appropriate way to weight *P1* and *P2* in order to measure the total off mode power draw. In the October 2011 SNOPR, DOE proposed to require calculation of the total off mode power consumption based upon an arithmetic mean of the power readings *P1* and *P2.* 76 FR 65616, 65621 (Oct. 24, 2011).

The Joint Efficiency Advocates opposed the DOE's proposal in the October 2011 SNOPR. (Joint Efficiency Advocates, No. 35 at p. 4) The CA IOUs proposed to weight *P1* by 25% and *P2* by 75%, because this weighting would be more representative of actual heater operation than equally weighting *P1* and *P2.* (Joint Utilities, No. 33 at p. 2) Conversely, Goodman and AHRI opposed the CA IOUs' proposal because there was inadequate data available to support weighting *P1* by 25% and *P2* by 75%. Further, Goodman and AHRI stated that the CA IOUs' proposal would not fairly differentiate between products with different crankcase heater turn-on and turn-off temperatures. A unit with a lower turn-on and a higher turn-off temperature would consume less overall energy, but a manufacturer would have no incentive to use the lowest possible temperatures because the rating would not change. (Goodman, No. 42 at p. 2; AHRI, No. 41 at p. 3)

AHRI, Goodman, and the Joint Efficiency Advocates suggested that average power should be calculated by weighting the off mode hours using a bin method, in a manner consistent with the calculations of seasonal active-mode. (AHRI, No. 41 at p.3; Goodman, No. 42 at p. 1; Joint Efficiency Advocates, No. 35 at p. 5; Joint Efficiency Advocates, No. 43 at p. 3) AHRI provided a detailed methodology for calculating the off mode power rating in an excel spreadsheet submitted with its written comments. (AHRI, No. 41 at p. 2) AHRI introduced bin calculations to calculate seasonal *P1* and *P2* values, including recommending a different set of fractional bin-hours for the shoulder season. Goodman supported AHRI's proposal. (Goodman, No. 42 at p. 1) However, AHRI and Goodman commented that if DOE did not accept AHRI's proposed calculation, DOE should implement a 50% weighting of *P1* and *P2* as proposed in the October 2011 SNOPR. (AHRI, No. 41 at p. 3; Goodman, No. 42 at p. 2)

After reviewing the Off-Mode Power excel spreadsheet from AHRI and the comments received from stakeholders, DOE retains its proposal from the October 2011 SNOPR, which gives equal weighting to *P1* and *P2* for the calculation of the off mode power rating ($P_{W,OFF}$). 76 FR 65616, 65620 (Oct. 24, 2011). Comments from the stakeholders did not provide any data that support selection of specific weights for *P1* and *P2.* Therefore DOE cannot confirm that AHRI's suggested temperature bin-hour calculation method is representative of the off mode power for the shoulder and heating seasons.

3. Products With Large, Multiple or Modulated Compressors

In the October 2011 SNOPR, DOE proposed to adjust the measured off mode power draw for systems with multiple compressors and apply a scaling factor to systems larger than 3 tons. 76 FR at 65621–22. The CA IOUs and the Joint Efficiency Advocates disagreed with DOE's approach. (Joint Efficiency Advocates, No. 35 at p. 5; CA IOUs, No. 33 at p. 2; CA IOUs, No. 40 at p. 1) The CA IOUs commented that adjusting the off mode power draw for systems with multiple compressors and applying a scaling factor to extra-large systems would not represent actual off mode power consumption and recommended that DOE not reduce the calculated off mode power based on the number of compressors. (CA IOUs, No. 33 at p. 2)

AHRI and Goodman disagreed with CA IOUs' suggestion to eliminate the adjustment based on the number of compressors as it may potentially discourage the development and use of higher efficiency products. (AHRI, No. 36 at p. 2; AHRI, No. 41 at p. 3; Goodman, No. 42 at p. 2) Moreover, AHRI requested that a similar credit be given to products using modulating compressors due to the typical application where a higher charge is a requirement of the high efficiency systems. (AHRI, No. 36 at p. 2) AHRI also disagreed with the idea of eliminating the scaling factor proposed for rating larger compressors. (AHRI, No. 41 at p. 3) Lastly, AHRI recommended that the measurement of the off mode power consumption and of the low-voltage power from the controls for the shoulder season be divided by the number of compressors or number of discrete controls, as is currently done for the measurements in the heating season. (AHRI, No. 36 at p. 2)

DOE is aware that some systems may require higher wattage heaters to protect system reliability. Specifically, larger-capacity units may have larger-capacity compressors, which (at a high level) have larger shells with more surface area that can cool them off, thus requiring more heater wattage. They may also have more lubricant, thus it takes more heater wattage to heat up the lubricant to acceptable level (for example after a power outage) before restart. To avoid situations that force manufacturers to potentially compromise the reliability of their systems by downsizing crankcase heater wattages to meet off mode power requirements, DOE proposes to retain the recommended scaling factor for large capacity systems.

Additionally, DOE does not want to penalize manufacturers of multiple compressor systems, which are highly efficient but also need to employ larger crankcase heaters for safe and reliable operation given the additional shell surface area and lubricant. Therefore, DOE agrees with AHRI's recommendation and proposes that the off mode power consumption for the shoulder season and heating season, as well as the low-voltage power from the controls, be divided by the number of compressors to determine off mode power consumption on a per-compressor basis.

The direct final rule also did not consider the possible applicability of the new off mode standards to high-efficiency air conditioners and heat pumps that achieve high SEER and HSPF ratings using both large heat exchangers and compressor modulation. The correlation of the use of modulating compressors with high refrigerant charge, which is indicative of larger heat exchangers, was mentioned in the AHRI comment. (AHRI, No. 41 at p. 3) DOE does not want to penalize manufacturers for selling high efficiency units. Therefore, DOE agrees with AHRI's recommendation to apply a multiplier to the calculation of the per-compressor off mode power for the shoulder season and heating season for modulated compressors, but proposes a multiplier of 1.5, as modulating technology is not a multiple-compressor technology (with a multiplier of 2+). DOE requests comment on the multiplier of 1.5 for calculating the shoulder season and heating season per-compressor off mode power for modulated compressors.

4. Procedure for Measuring Low-Voltage Component Power

In the October 2011 SNOPR, DOE proposed to measure the power from low-voltage components, P_x, after each of the two tests conducted at *T1* and *T2*. 76 FR 65628–30. Although this would ensure that the low-voltage power consumption at each temperature test point would be removed from the respective off mode power consumption, AHRI expressed concern about excessive manufacturer test burden. AHRI recommended that P_x not be re-measured, as it does not change with temperature and not re-measuring it avoids automatic and unwanted operation of the crankcase heater. (AHRI, No. 36 at p. 3)

DOE agrees with AHRI that the low voltage power consumption does not change with temperature, although slight and insignificant fluctuations in the low-voltage power may occur due to the relationship of resistivity and conductivity to temperature. Moreover, DOE does not believe that these fluctuations outweigh the test burden added from reconfiguring the system for measuring the low-voltage power a second time. As such, the test procedure has been revised so that the measurement of P_x is not repeated. DOE proposes to require that the measurement of P_x occur after the measurement of the heating season total off mode power, $P2_x$, which reduces test burden by requiring a single disconnection of the low-voltage wires.

Additionally, DOE is aware that many control types exist for crankcase heaters, and certain control methodologies cycle the crankcase heater on and off during the 5-minute interval during which P_x is being measured. Since P_x measures the power of functioning components, only non-zero values of measured power should be used in the calculations. DOE has therefore included in the proposed test procedure a requirement to record only non-zero data for the determination of P_x.

5. Revision of Off-Mode Power Consumption Equations

As a result of the proposed revisions to the test procedure discussed in section III.D.3 and section III.D.4, the equations from the October 2011 SNOPR for determining *P1* for crankcase heaters without controls and for determining *P2* for crankcase heaters with controls are simplified in this proposal. The revised equations are:

$$P1 = \frac{P1_x - P1_D}{no\ of\ compressors} + P1_D,$$

and

$$P2 = \frac{P2_x - P1_x}{no\ of\ compressors} + P1,$$

respectively. 76 FR 65616, 65629–30 (Oct. 24, 2011). $P1_D$ is the off mode power with the crankcase heater disconnected, which is equal to the low-voltage power, P_x. $P1_x$ is the shoulder-season total off mode power, $P2_x$ is the heating-season total off mode power, *P1* is the per-compressor shoulder-season total off mode power, and *P2* is the per-compressor heating-season total off mode power.

The proposed revisions to section III.D.3 (per-compressor representation of *P1*) and section III.D.4 (temperature-independence of P_x) of this notice allow for the simplification of the equations that would be used to calculate power for crankcase heaters with or without controls. The two proposed revisions are based on the following three premises: (1) The representations of *P1* and *P2* would both be calculated on a per-compressor basis (as discussed in section III.D.3); (2) The value of P_x would not vary with temperature and would thus be the same at *T1* as it is at *T2* (as discussed in section III.D.4); (3) The following would apply under the proposed method: $P2 = P2_x - P_{xi}\ P1 = P1_x - P_x$. (As discussed in the October 2011 SNOPR at 76 FR 65629). Applying the three premises to the equations for *P1* and *P2* from the October 2011 SNOPR results in the following simplification:

$$P1 = \frac{P1_x}{no\ of\ compressors}$$

and

$$P2 = \frac{P2_x}{no\ of\ compressors}$$

6. Off-Mode Power Consumption for Split Systems

AHRI commented that language in the October 2011 SNOPR may have caused stakeholders to infer that every blower coil indoor unit combination and every coil-only indoor unit combination must be tested to determine off mode power consumption. (AHRI, No. 36 at p. 2) AHRI recommended that DOE only require testing of the outdoor condensing unit for the highest sale-volume combination of each basic model to determine the off mode power consumption and allow use of an alternative rating method (ARM) to reduce test burden. (AHRI, No. 36 at p. 2)

In this SNOPR, DOE proposes generally that each basic model would be required to have all applicable represented values (SEER, EER, HSPF, or $P_{W,OFF}$) of a specified individual combination determined through testing. The other individual combinations within each basic model may be tested or rated using AEDMs. As such, only one individual combination within each basic model would be required to be tested to determine off mode power consumption.

Additionally, upon reviewing the test procedures of furnace products, DOE found that the indoor off mode power in coil-only split-systems (that would be installed in the field with a furnace) was accounted for in the furnace test methodology. The indoor power for coil-only systems consists of the controls for the electronic expansion valve drawing power from control boards either indoor in the furnace assembly or outdoor in the condensing unit. To avoid double-counting indoor off mode power between two products, DOE proposes to exclude measurement of the low-voltage power if the controls for the indoor components receive power from a control board dedicated to a furnace assembly. For blower coil indoor units in which the air mover is a furnace, the same proposal applies. For blower coil indoor units in which the designated air mover is not a furnace, since the off mode power of the indoor components is not accounted for in any other product's test methodology, DOE proposes to adopt language to include the low-voltage power from the indoor unit when measuring off mode power consumption for blower coil systems.

7. DOE requests comment on its proposal to exclude low-voltage power from the indoor unit when measuring off mode power consumption for coil-only split-system air conditioners and for blower coil split system air conditioners for which the air mover is a furnace. DOE also requests comment on its proposal to include the low-voltage power from the indoor unit when measuring off mode power consumption for blower coil split-system air conditioners with an indoor blower housed with the coil and for heat pumps.

Time Delay Credit

To provide an additional incentive for manufacturers to reduce energy consumption, AHRI and Goodman suggested adding a credit for crankcase heaters that incorporate a time delay before turning on during the shoulder season. (AHRI, No. 41 at p. 2; Goodman, No. 42 at p. 1) The off mode period in the calculation methodology designates extended periods during which the unit is idle. DOE proposes to adopt an energy consumption credit that would be proportional to the duration of the delay, as implemented in the calculation of the off mode energy consumption for the shoulder season, *E1,* in the proposed off mode test procedure. DOE is also proposing, for products in which a time delay relay is installed but the duration of the delay is not specified in the manufacturer's installation instructions shipped with the product or in the certification report, a default period of non-operation of 15 minutes out of every hour, resulting in a 25% savings in shoulder-season off mode energy consumption. To reduce potential instances of the misuse of this incentive, DOE also proposes requiring manufacturers to report the duration of the crankcase heater time delay for the shoulder season and heating season that was used during certification testing. DOE is also considering adding a verification method to 429.134. DOE requests comment on the proposed method for accounting for the use of a time delay, the default period of non-operation, and the possibility of a verification test for length of time delay.

8. Test Metric for Off-Mode Power Consumption

The June 2010 NOPR proposed a test procedure that would measure the average off mode power consumption, $P_{W,OFF}$, of a central air conditioner or heat pump. 75 FR 31238–39. Additionally, the amended energy conservation standards for central air conditioners and heat pumps in the June 2011 DFR included standards for off mode power consumption that were defined in terms of $P_{W,OFF}$. 76 FR 37408, 37411. The Joint Efficiency Advocates and the CA IOUs commented that the test procedure should calculate energy use and not average power draw. (Joint Efficiency Advocates, No. 43 at p. 3; CA IOUs, No. 33 at p. 1) The CA IOUs stated that DOE should measure energy use because control systems on the crankcase heater can save power by reducing run time, which is not captured by a power-draw metric. (CA IOUs, No. 33 at p. 1) The Joint Efficiency Advocates also requested that any standards promulgated should be based on energy use. (Joint Efficiency Advocates, No. 43 at p. 2) To maintain consistency with the off mode standards, the test procedure must measure off mode power consumption rather than energy use. However, DOE recognizes that adopting a bin-based approach to calculate $P_{W,OFF}$ does not provide a final off mode value that is indicative of actual power consumption. DOE is aware of alternative methods to determine a power rating. However, in consideration of testing burden, DOE proposes to implement a method of calculation that would closely approximate the actual off mode power consumption via a simple average of the shoulder and heating season measured values. Although this metric will not directly translate into instantaneous off mode power consumption, annual energy costs, or national energy consumption, it does provide a standardized method of calculation that is representative of average off mode power consumption. The average off mode power calculation can be used for ranking models based on their performance when idle, as well as for comparing a model's performance to the DOE standards.

DOE is aware that measurement of energy use for a specified test period would enable calculation of annual energy consumption and operating costs and, on a larger scale, national energy savings and national energy consumption solely due to equipment idling. Therefore, DOE has proposed optional equations that a manufacturer could use to determine the actual off mode energy consumption, based on the hours of off mode operation and off mode power for the shoulder and heating seasons, to provide additional information to consumers. Energy consumption would be specific to a single location and its unique set of cooling, heating, and shoulder season hours. DOE requests comment on such equations.

9. Impacts on Product Reliability

AHRI and Bristol Compressors submitted comments expressing concern that regulating crankcase heater energy consumption could have a negative impact on product reliability (AHRI, No. 41 at pp. 1–2; Bristol, No. 39 at p. 1) Bristol Compressors remarked that simply turning the crankcase heater off at specific outdoor ambient temperatures would expose many compressors to conditions that would reduce the effective life of the product or, at worst, cause immediate failure. Bristol requested that DOE allow additional time for research on technological options that could save energy in a manner similar to controls based on outdoor ambient temperature, but that do not impact the reliability of the product. (Bristol, No. 39 at p. 1) AHRI asked DOE to conduct further research to determine if regulating crankcase heater energy consumption has a negative impact on product reliability and to consider additional amendments to the test procedure, if deemed necessary, to limit impacts on product reliability. (AHRI, No. 41 at p. 2)

DOE expects that this proposed off mode test method will allow manufacturers to meet the June 2011 off mode standards without causing a shift in the reliability of the overall market of central air conditioners and heat pumps. DOE requests comments on the issue of compressor reliability as it relates to crankcase heater operation in light of the test method proposed in this rule.

10. Representative Measurement of Energy Use

In the April 2011 SNOPR DOE proposed modifications to the laboratory tests and algorithms for determining the off mode power of central air conditioners and heat pumps. 76 FR 18105, 18107–09 (April 1, 2011). DOE received comments indicating that the April 2011 SNOPR was overly burdensome, and the October 2011 SNOPR proposed a revised method that was intended to reduce this burden. 76 FR 65616 (Oct. 24, 2011).

Following the October 2011 SNOPR, the Joint Efficiency Advocates stated that, while minimizing test burden is important, DOE is also obligated by statute to prescribe a test procedure that measures the energy use of a covered product during a representative average use cycle or period of use. (42 U.S.C. 629(b)(3)) The Joint Efficiency Advocates stated that the Department's proposal was far from accomplishing that statutory requirement. (Joint Efficiency Advocates, No. 35 at p. 2) The CA IOUs noted that the test procedure revisions presented in the October 2011 SNOPR would not encourage innovative designs of heating systems in off mode, and that the results produced by the test procedure would be misleading to consumers, because the reported values would not be indicative of actual power draw if DOE were to require measurements based on fixed outdoor temperatures and use a simple average of *P1* and *P2.* (CA IOUs, No. 33 at p. 1)

However, in the December 2011 extension notice, DOE proposed to consider the suggestion by the CA IOUs to use the actual outdoor temperatures at which the crankcase heater turns on or off to measure *P1* and *P2,* as discussed in section III.D.2. The CA IOUs subsequently submitted comments that reaffirmed this proposal, and recommended that DOE consider its proposals to use a weighted average of P1 and P2 and to not adjust power draw for systems with multiple compressors or large-capacity systems. (CA IOUs, No. 40 at p.1) The Joint Efficiency Advocates conveyed strong support for the CA IOUs' proposal and remarked that the test procedure would not be indicative of actual energy use if DOE did not adopt the CA IOUs' proposal. (Joint Efficiency Advocates, No. 43 at p. 1; Joint Efficiency Advocates, No. 43 at p. 3)

As previously discussed, DOE must develop test procedures to measure energy use that balance test burden with measurement accuracy. The off mode test procedures published in the original NOPR and the first SNOPR were judged by stakeholders to be too complex and burdensome. As a result, DOE proposed a test method in the second SNOPR that was simplified and designed to result in comparatively less test burden. The simplified test procedure, however, may have impacted the ability to provide a measurement that is representative of an average use cycle or period of use. In this third SNOPR, DOE has made additional revisions and believes that this new proposed off mode test procedure limits test burden to a reasonable extent and will provide a means for measuring off mode power use in a representative manner.

E. Test Repeatability Improvement and Test Burden Reduction

42 U.S.C. 6293(b)(3) states that any test procedure prescribed or amended shall be reasonably designed to produce test results which measure energy efficiency and energy use of a covered product during a representative average period of use and shall not be unduly burdensome to conduct. This section discusses proposals to improve test procedure clarity and to reduce test burden. None of the proposals listed in this section would alter the average measured energy consumption of a representative set of models.

1. Indoor Fan Speed Settings

Indoor unit fan speed is typically adjustable during test set-up to assure that the provided air volume rate is appropriate for the field-installed ductwork system serving the building in which the unit is actually installed. The DOE test procedure accounts for these variable settings by establishing specific requirements for external static pressure and air volume rate during the test. For an indoor coil tested with an indoor fan installed, DOE's test procedure requires that (a) external static pressure be not less than a minimum value that depends on cooling capacity [11] and product class, ranging from 1.10 to 1.20 inches of water column (in. wc.) for small-duct, high-velocity systems and from 0.10 to 0.20 in. wc. for all other systems except non-ducted units (see 10 CFR part 430, subpart B, Appendix M, Table 2); and (b) the air volume rate divided by the total cooling capacity not exceed a maximum value of 37.5 cubic feet per minute of standard air (scfm) per 1000 Btu/h of cooling capacity [12] (see 10 CFR part 430, subpart B, Appendix M, Section 3.1.4.1.1).

Requirement (a) is more easily met using higher fan speeds, while requirement (b) is more easily met by lower fan speeds. DOE realizes that more than one speed setting may meet both the minimum static pressure and the maximum air volume rate requirements. Section 3.1.4.1.1(a)(6) of the current DOE test procedure for air conditioners and heat pumps allows adjustment of the fan speed to a higher setting if the first selected setting does not meet the minimum static pressure requirement at 95 percent of the cooling full-load air volume rate.[13] This step suggests that common test practice would be to initially select lower fan speeds to meet the requirements before attempting higher speeds. However, the test procedure does not, for cases in which two different settings could both meet the air volume rate and static pressure requirements, explicitly specify that the lower of the two settings should be used for the test. The fan power consumption would generally be less at lower speeds, but compressor power consumption may be reduced at conditions of higher air volume rate—hence it is not known prior to testing whether a higher or lower air volume rate will maximize the SEER or HSPF for a given individual model. However, DOE is aware that efficiency ratings are generally better when products are tested at the lowest airflow-control settings intended for cooling (or heating) operation that will satisfy both the minimum static pressure and maximum air volume rate requirements. DOE therefore proposes that blower coil products tested with an indoor fan installed be tested using the lowest speed setting that satisfies the minimum static pressure and the maximum air volume rate requirements, if applicable, if more than one of these settings satisfies both requirements. This is addressed in section 2.3.1.a of Appendix M.

For a coil-only system, *i.e.,* a system that is tested without an indoor fan installed, the pressure drop across the indoor unit must not exceed 0.3 inches of water for the A test (or A_2 test for two-capacity or variable-capacity systems), and the maximum air volume rate per capacity must not exceed 37.5 cubic feet per minute of standard air (scfm) per 1000 Btu/h. (10 CFR part 430, subpart B, Appendix M, Section 3.1.4.1.1) For such systems, higher air volume rates enhance the heat transfer rate of the indoor coil, and therefore may maximize the measured system capacity and efficiency. In addition, the energy use and heat input attributed to the fan energy for such products is a fixed default value in the test procedure, and is set at 365 W per 1,000 scfm (10 CFR part 430, subpart B, Appendix M, Section 3.3(d)). Thus, the impact from fan power on the efficiency measurement if air volume rate is increased may be more modest than for a unit tested with the indoor fan installed. However, a maximum external static pressure of 0.3 in. wc. is specified for the indoor coil assembly in order to represent the field-installed conditions. To minimize potential testing variability due to the use of different air volume rates, DOE proposes to require for coil-only systems for which the maximum air flow (37.5 scfm/1000 Btuh) or maximum pressure drop (0.3 in wc) are exceeded when using the specified air flow rate, the highest air flow rate that satisfies both the maximum static pressure and the maximum air volume rate requirements should be used. This is specified in section 3.1.4.1.1.c of Appendix M.

Improper fan speed implemented during testing may have a marked impact on product performance, and inconsistent implementation of speed adjustments may be detrimental to test repeatability. DOE therefore proposes to require that manufacturers include in their certification report the speed setting and/or alternative instructions for setting fan speed to the speed upon which the rating is based.

For consistency with the furnace fan test procedure, DOE proposes to add to Appendix M (and also Appendix M1) the definition for ''airflow-control setting'' that has been adopted in Appendix AA to refer to control settings used to obtain fan motor operation for specific functions.

DOE requests comment on its proposals regarding requirements on fan speed settings during test setup.

[11] Or heating capacity for heating-only heat pumps.

[12] Such a requirement does not exist for heating-only heat pumps.

[13] For heating-only heat pumps, Section 3.1.4.4.3(a)(6) allows adjustment of the fan speed to a higher setting if the first selected setting does not meet the requirements minimum static pressure requirement at 95 percent of the heating full-load air volume rate.

2. Requirements for the Refrigerant Lines and Mass Flow Meter

Section 2.2(a) of 10 CFR part 430, subpart B, Appendix M provides instructions for insulating the ''low-pressure'' line(s) of a split-system. In the cooling mode, the vapor refrigerant line connecting the indoor and outdoor units is operating at low refrigerant pressure. However, in the heating mode, the vapor refrigerant line connecting the indoor and outdoor units operates at high pressure, providing high pressure vapor to the indoor unit. To improve clarity and ensure that the language of the test procedure refers specifically to the actual functions of the refrigerant lines, DOE proposes to refer to the lines as ''vapor refrigerant line'' and ''liquid refrigerant line''.

Section 2.2(a) of 10 CFR part 430, subpart B, Appendix M and AHRI 210/240–2008 Section 6.1.3.5 both require insulation on the vapor refrigerant line and do not state what insulation, if any, is required on the liquid refrigerant line. Differences in product design and in the parts manufacturers decide to ship with the unit may lead to varying interpretations regarding the need to insulate the liquid refrigerant line during the test and may therefore introduce test variability. Furthermore, there may be unnecessary burden on test laboratories if they choose to add insulation when manufacturers do not to ship liquid refrigerant line insulation with the unit. While DOE wishes to clarify requirements for insulation of refrigerant lines, there are two factors that make such a determination difficult: (1) There may be reasons both for insulating and for not insulating the liquid refrigerant tubing—if not insulated, additional subcooling of the refrigerant liquid as it passes through the line prior to its expansion in the indoor unit may increase cooling capacity and thus increase the measured SEER. However, the increased subcooling of the liquid would increase the load on the outdoor coil during the heating mode of a heat pump, which may slightly reduce evaporating temperature and thus both reduce heat pump capacity and increase compressor power input. On the other hand, insulating the liquid line would result in higher measurements of HSPF for a heat pump when compared with measurements with the liquid line not insulated, but would result in lower measurements of the SEER; (2) DOE has observed that installation manuals for air conditioners and heat pumps generally indicate that liquid lines should be insulated in special circumstances (*e.g.,* running the line through a warm space or extra-long refrigerant line runs), but do not provide guidance on the use of insulation in the absence of such conditions.

Because DOE seeks to minimize test variability associated with the use of insulation, this notice includes a proposal for determining the insulation requirement for the test based on the materials and information included by the manufacturer with the test unit. Under this proposal, test laboratories would install the insulation shipped with the unit. If the unit is not shipped with insulation, the test laboratory would install the insulation specified in the installation manuals included with the unit by the manufacturer. Should the installation instructions not provide sufficient guidance on the means of insulating, liquid line insulation would be used only if the product is a heating-only heat pump. These proposed requirements are intended to reduce test burden and improve test repeatability for cooling and heating products, as well as heating-only products. DOE requests comment on its proposal to require that test laboratories install the insulation included with the unit or, if insulation was not furnished with the unit, follow the insulation specifications in the manufacturer's installation instructions. DOE also requests comment on its proposal to require liquid line insulation of heating-only heat pumps.

In cases where the refrigerant enthalpy method is used as a secondary measurement of indoor space conditioning capacity, uninsulated surfaces of the refrigerant lines and the mass flow meter may also contribute to thermal losses. DOE does not believe that preventing the incremental thermal losses associated with the mass flow meter components and its support structure would make a measurable impact on efficiency measurements. However, DOE does recognize the possibility that thermal loss might reduce the efficiency measurement, particularly during heating mode tests if the mass flow meter is placed on the test chamber floor, which might be cooler than the air within the room. To enhance test repeatability among various laboratories that may use different mass flow meters with varying materials for support structures, DOE proposes to require use of a thermal barrier to prevent such thermal transfers between the flow meter and the test chamber floor if the meter is not mounted on a pedestal or other support elevating it at least two feet from the floor. DOE proposes to add these requirements to Appendix M, section 2.10.3. DOE requests comment on this means to prevent meter-to-floor thermal transfer.

3. Outdoor Room Temperature Variation

Depending on the operating characteristics of the test laboratory's outdoor room conditioning equipment, temperature or humidity levels in the room may vary during testing. For this reason, a portion of the air approaching the outdoor unit's coil is sampled using an air sampling device (see Appendix M, section 2.5). The air sampling device, described in ASHRAE Standard 41.1–2013, consists of multiple manifolded tubes with a number of inlet holes, and is often called an air sampling tree. If, during testing, the air entering the outdoor unit of a product is monitored only on one of its faces and there is significant spatial variation of the room's air conditions, the measured conditions for the monitored face may not be indicative of the average conditions for the inlet air across all faces.

To ensure that the measurements account for variation in the conditions in the outdoor room of the test chamber, DOE proposes to require demonstration of air temperature uniformity over all of the air-inlet surfaces of the outdoor unit using thermocouples, if sampling tree air collection is performed only on one face of the outdoor unit. Specifically, DOE would require that the thermocouples be evenly distributed over the inlet air surfaces such that there is one thermocouple measurement representing each square foot of air-inlet area. The maximum temperature spread to demonstrate uniformity, *i.e.,* the maximum allowable difference in temperature between the measurements at the warmest location and at the coolest location, would be 1.5 °F (DOE proposes to add these requirements to Appendix M, section 2.11.b). This is the same maximum spread allowable for measurement of indoor unit capacity using thermocouple grids, as described in 10 CFR part 430, subpart B, Appendix M, Section 3.1.8, in which the maximum spread among the measured temperatures on the thermocouple grid in the outlet plenum of the indoor coil must not exceed 1.5 °F dry bulb. If this specified measurement of temperature uniformity cannot be demonstrated, DOE would require sampling tree collection of air from all air-inlet surfaces of the outdoor unit. DOE seeks comment for the proposed 1.5 °F maximum spread for demonstration of outdoor air temperature uniformity, the proposed one square foot per thermocouple basis for thermocouple distribution, and the proposed requirement that an air sampling device be used on all outdoor unit air-inlet surfaces if temperature uniformity is not demonstrated. DOE proposes to add these requirements to Appendix M, section 2.11.b.

4. Method of Measuring Inlet Air Temperature on the Outdoor Side

To ensure test repeatability, DOE seeks to ensure that temperature measurements taken during the test are as accurate as possible. DOE is aware that measurement of outdoor inlet temperatures is commonly based on measurements of the air collected by sampling devices that use high-accuracy dry bulb temperature and humidity measurement devices, and that the accuracy of these devices may be better than that of thermocouples. DOE proposes to require that the dry bulb temperature and humidity measurements, that are used to verify that the required outdoor air conditions have been maintained, be measured for the air collected by the air sampling devices (*e.g.,* rather than being measured by temperature sensors located in the air stream approaching the air inlets). DOE requests comment on this proposal.

5. Requirements for the Air Sampling Device

In evaluating various test setups and laboratory conditions, DOE has observed that certain setup conditions of the air sampling equipment could lead to measurement error or variability between laboratories. Specifically, the temperature of air collected by indoor and outdoor room air sampling devices could potentially change as it passes through the air collection system, leading to inaccurate temperature measurement if the air collection devices or the conduits conducting the air to the measurement location are in contact with the chamber floor or with ambient air at temperatures different from the indoor or outdoor room. To prevent this potential cause of error or uncertainty, DOE proposes to require that no part of the room air sampling device or the means of air conveyance to the dry bulb temperature sensor be within two inches of the test chamber floor. DOE also proposes to require those surfaces of the air sampling device and the means of air conveyance that are not in contact with the indoor and outdoor room air be insulated.

A potential contributor to error or uncertainty in the measurement of humidity is the taking of dry bulb and wet bulb measurements in different locations, if there is significant cool down of air between the two locations. While ASHRAE Standard 41.1–2013 provides an example of an air sampling device with a dry bulb and wet bulb thermometer placed close together, the figure is merely illustrative. To minimize measurement error or uncertainty, DOE proposes to require that humidity measurements and dry bulb temperature measurements used to determine the moisture content of air be made at the same location in the air sampling device.

As discussed in section III.E.14, DOE has also proposed several amendments to air sampling procedures that are included in a draft revision of AHRI 210/240–2008. DOE requests comments on all of these related proposals, including its proposal to require that the air sampling device and its components be prevented from touching the test chamber floor, to require insulation of those surfaces of the air sampling device and components that are not in contact with the chamber room air, and that dry bulb temperature and humidity measurements used to determine the moisture content of air be made at the same location in the air sampling device.

6. Variation in Maximum Compressor Speed With Outdoor Temperature

When testing an air conditioner or heat pump with a variable-speed compressor, the compressor must be tested at three different speeds: Maximum, intermediate, and minimum. Some air conditioners and heat pumps with a variable-speed compressor operate such that their maximum allowed compressor speed varies with the outdoor temperature. However, the test procedure does not explicitly state whether the maximum compressor speed refers to a fixed value or a temperature-dependent value. As such, DOE proposes that the maximum compressor speed be fixed during testing through modification of the control algorithm used for the particular product such that the speed does not change with the outdoor temperature. DOE requests comment on this proposal.

7. Refrigerant Charging Requirements

Near-azeotropic and zeotropic refrigerant blends are composed of multiple refrigerants with a range of boiling points. Gaseous charging of refrigerant blends is inappropriate because it can result in higher concentrations of the higher-vapor pressure constituents being charged into the unit, which can alter refrigerant performance characteristics and thus, unit performance. DOE recognizes that technicians certified to handle refrigerants via the Environment Protection Agency's (EPA) Section 608 Technician Certification Program, as mandated by 40 CFR 82.161, are required to be knowledgeable of charging methods for refrigerant blends. However, to ensure consistent practices within the context of the DOE test procedure, DOE proposes to require that near-azeotropic and zeotropic refrigerant blends be charged in the liquid state rather than the vapor state. This is found in section 2.2.5.8 of Appendix M. DOE requests comments on this proposal.

Current language in Appendix M to Subpart B of 10 CFR part 430 does not prohibit testers from changing the amount of refrigerant charge in a system during the course of air conditioner and heat pump performance tests. Changing the amount of refrigerant may result in a higher SEER and/or a higher HSPF that does not reflect the actual performance of a unit in the field. In the June 2010 NOPR, DOE proposed to adopt into the test procedure select parts of the 2008 AHRI General Operations Manual that contains language disallowing changing the refrigerant charge after system setup. (75 FR 31234–5) AHRI and NEEA supported this proposal. (AHRI, No. 6 at p. 3; NEEA, No. 7 at p. 4) To ensure that performance tests reflect operation in the field, and to improve consistency in results between test facilities, DOE intends to retain the proposal made in the June 2010 NOPR. Specifically, DOE retains the proposed requirement that once the system has been charged with refrigerant consistent with the installation instructions shipped with the unit (or with other provisions of the test procedure, if the installation instructions are not provided or not clear), all tests must be conducted with this charge.

DOE is aware that refrigerant charging instructions are different for different products, but that in some cases, such instructions may not be provided. More specifically, the appropriate charging method may vary among products based upon their refrigerant metering devices. The thermostatic expansion valve (TXV) type metering device is designed to maintain a specific degree of superheat.[14] Electronic expansion valve (EXV) type metering devices function similarly to TXV type metering devices, but use sensors, a control system, and an actuator to set the valve position to allow more sophisticated control of the degree of superheat. Fixed orifice is

[14] The degree of superheat is the extent to which a fluid is warmer than its bubble point temperature at the measured pressure, *i.e.,* the difference between a fluid's measured temperature and the saturation temperature at its measured pressure.

another type of expansion device commonly used for air conditioners. In contrast to a TXV or EXV, a fixed orifice does not actively respond to system pressures or temperatures to maintain a fixed degree of superheat. The refrigerant charge can affect the measured system efficiency. Systems with different expansion devices react differently to variation in the charge, and they also generally require different procedures for ensuring that the system is properly charged. As the charging operation may differ among these types of metering devices, and misidentification may lead to inconsistent charging and unrepeatable testing, DOE proposes to require manufacturers to report the type of metering device used during certification testing.

If charging instructions are not provided in the manufacturer's installation instructions shipped with the unit, DOE proposes standardized charging procedures to ensure consistent testing in a manner that reflects field practices. For a unit equipped with a fixed orifice type metering device for which the manufacturer's installation instructions shipped with the unit do not provide refrigerant charging procedures, DOE proposes that the unit be charged at the A or A_2 test condition, requiring addition of charge until the superheat temperature measured at the suction line upstream of the compressor is 12 °F with tolerance discussed in section III E.14.[15] For a unit equipped with a TXV or EXV type metering device for which the manufacturer's installation instructions shipped with the unit do not provide refrigerant charging procedures, DOE proposes that the unit be charged at the A or A_2 condition, requiring addition of charge until the subcooling[16] temperature measured at the condenser outlet is 10 °F with tolerance discussed in section III E.14.[17]

For heating-only heat pumps for which refrigerant charging instructions are not provided in the manufacturer's installation instructions shipped with the unit, the proposed standardized charging procedure would be followed while performing refrigerant charging at the H1 or $H1_2$ condition. DOE also proposes that charging be done for the H1 or $H1_2$ test condition for cooling/heating heat pumps which fail to operate properly in heating mode when charged using the standardized charging procedure for the A or A_2 test condition. In such cases, some of the tests conducted using the initial charge may have to be repeated to ensure that all tests (cooling and heating) are conducted using the same refrigerant charge. DOE proposes to add these requirements to Appendix M in a new section 2.2.5.8.

DOE requests comments on the proposed standardized charging procedures to be applied to units for which the installation instructions shipped with the unit do not provide charging instructions.

DOE understands that manufacturers may provide installation instructions with different charging procedures for the indoor and outdoor units. In such cases, DOE proposes to require charging based on the installation instructions shipped with the outdoor unit for outdoor unit manufacturer products and based on the installation instructions shipped with the indoor unit for independent coil manufacturer products, unless otherwise specified by either installation instructions. DOE requests comments on this proposal.

Single-package central air conditioners and heat pumps may be shipped with refrigerant already charged into the unit. Verifying the proper amount of refrigerant charge is valuable for increasing test repeatability. To this end, DOE believes that the benefits of installing pressure gauges on a single-package unit to help verify charge and to monitor refrigerant conditions generally outweigh the potential drawbacks associated with connecting the gauges (*e.g.,* refrigerant transfer from the product into the gauges and hoses or refrigerant leakage); calculating the superheat or subcooling quantities used to determine whether the unit is charged properly requires knowledge of the refrigerant pressure, and the quantity of charge transferred from the unit when connecting a pressure gauge set is generally a very small percentage of the unit's charge. Further, assessing the refrigerant charge may improve repeatability of the tests and measured efficiency. DOE therefore proposes that refrigerant line pressure gauges be installed during the setup of single-package and split-system central air conditioner and heat pump products, unless otherwise specified by the instructions. DOE also proposes that the refrigerant charge be verified per the charging instructions and, if charging instructions are not provided in the installation instructions shipped with the unit, the refrigerant charge would be verified based on the standardized charging procedure described above. DOE requests comments on these proposals.

As discussed in section III.E.14, DOE has also proposed several amendments to charging procedures that are included in a draft revision of AHRI 210/240–2008. DOE requests comment on all aspects of its proposals to amend the refrigerant charging procedures.

8. Alternative Arrangement for Thermal Loss Prevention for Cyclic Tests

10 CFR part 430, subpart B, Appendix M, Section 2.5(c) requires use of damper boxes in the inlet and outlet ducts of ducted units to prevent thermal losses during the OFF period of the compressor OFF/ON cycle for the cooling or heating cyclic tests. However, DOE is aware that installation of such dampers for single-package ducted units can be burdensome because the unit must be located in the outdoor chamber and there may be limited space in the chamber and in between the inlet and outlet ducts to install the required transition ducts, insulation, and dampers. To preserve the intent of the air damper boxes, reduce testing burden, and accommodate variations in chamber size, DOE proposes an alternative testing arrangement to prevent thermal losses during the compressor OFF period that would eliminate the need to install a damper in the inlet duct that conveys indoor chamber air to the indoor coil.

The proposed alternative testing arrangement would allow the use of a duct configuration that relies on changes in duct height, rather than a damper, to eliminate natural convection thermal transfer out of the indoor duct during OFF periods of the ''cold'' or heat generated by the system during the ON periods. An example of such an arrangement would be an upturned duct installed at the inlet of the indoor duct, such that the indoor duct inlet opening, facing upwards, is sufficiently high to prevent natural convection transfer out of the duct. DOE also proposes to require installation of a dry bulb temperature sensor near the inlet opening of the indoor duct at a centerline location not higher than the lowest elevation of the duct edges at the inlet. Measurement and recording of dry bulb temperature at this location would be required at least every minute during the compressor OFF period to confirm that no thermal loss occurs. DOE

[15] The range of superheating temperatures was generalized from industry-accepted practice and state-level authority regulations on refrigerant charging for non-TXV systems.

[16] The degree of subcooling or subcooling temperature is the extent to which a fluid is cooler than its refrigerant bubble point temperature at the measured pressure, *i.e.,* the bubble point temperature at a fluid's measured pressure minus its measured temperature. Bubble point temperature is the temperate at a given pressure at which vapor bubbles just begin to form in the refrigerant liquid.

[17] The range of subcooling temperatures was generalized from manufacturer-published and technician-provided service instructions and are typical of industry practice.

proposes a maximum permissible variation in temperature measured at this location during the OFF period of ±1.0 °F.

DOE seeks comment on its proposal in section 2.5(c) of Appendix M to allow, for cyclic tests, alternative arrangements to replace the currently-required damper in the inlet portion of the indoor air ductwork for single-package ducted units. DOE also requests comment on the proposed requirements for ensuring that there are no thermal losses during the OFF portion of the test, including the location of the proposed dry bulb temperature sensor, the requirements for recorded temperatures, and the ±1.0 °F allowable variation in temperature measured by this sensor.

9. Test Unit Voltage Supply

The current DOE test procedure references ARI Standard 210/240–2006 Section 6.1.3.2 for selecting the proper electrical voltage supply, which generally requires that, for tests performed at standard rating conditions (referred to as ''Standard Rating tests'' in Standard 210/240), the tests be conducted at the product's nameplate rated voltage and frequency. This section also requires that Standard Rating tests be performed at 230 V for air-cooled equipment rated with 208–230 V dual nameplate voltages, and that all other dual nameplate voltage equipment be tested at both voltages or at the lower of the two voltages if only a single Standard Rating is to be published. DOE recognizes that nameplate voltages may differ for indoor and outdoor units. This may result in a difference of voltage supplied to the indoor and outdoor units in accordance with the current test requirement. DOE realizes that, in most cases, this voltage difference that may occur during testing is not representative of field operation where indoor and outdoor units are typically supplied with the same voltage. As such, DOE proposes to clarify that the outdoor voltage supply requirement supersedes the indoor requirement if the provisions result in a difference for the indoor and outdoor voltage supply. That is, both the indoor and outdoor units shall be tested at the same voltage supplied to the outdoor unit.

10. Coefficient of Cyclic Degradation

The cooling coefficient of degradation, C_D^c, is the ratio of the EER measured for cycling (or intermittent) operation to the EER that would be measured for steady operation. The heating coefficient of degradation, C_D^h, is a similar factor that characterizes efficiency reduction for cycling operation during heat pump operation. The test procedures to determine these two coefficients are the same except for the testing conditions and unit operation mode, and the changes discussed in this section are applied to both metrics. Therefore, for the sake of simplicity and clarity, only the cooling coefficient of degradation is discussed here.

The current test procedure gives manufacturers the option to use a default cyclic degradation coefficient (C_D) value of 0.25 instead of running the optional cyclic test. In response to the June 2010 NOPR, which proposed some modifications related to the optional tests but not the default value, NEEA commented that its laboratory testing demonstrated that the default value 0.25 is not representative of system performance, especially for TXV-equipped systems, and instead supported using the actual tested values in determining ratings. (NEEA, No. 7 at pp. 6–7) DOE reviewed results from its own testing of 19 split-system and single-package air conditioners and heat pumps from 1.5 to 5 tons and found that the tested C_D values range from 0.02 to 0.18, with an average of 0.09. It also found no correlation between C_D and SEER, EER, or cooling capacity. DOE also reviewed the AHRI 210/240-Draft (see section III.E.14), which updates the cooling C_D^c value to 0.2. DOE believes this default value may be more in-line with actual tested values, and DOE proposes to update the default cooling C_D^c value in Appendix M to 0.2. At this time, DOE is not proposing to update the default heating C_D^h value. In evaluating appropriate default values, DOE also reviewed its testing requirements to measure C_D.

DOE is aware of various issues that occur when conducting the test procedure to measure the degradation coefficient, such as the inability to attain stable capacity measurements from cycle to cycle and burdensome testing time to attain stability, and believes that these are symptoms of cyclic instability. DOE believes that the variation in cooling capacity during the test to determine C_D^c is exacerbated by the short compressor on-time specified for each cycle and by the effect of response time, sensitivity, and repeatability errors. DOE understands the importance of having a minimally burdensome test procedure. However, DOE recognizes that the current test method for measuring C_D^c, although clear in description and intent, does not provide requirements for cyclic stability of measured capacity over successive on-cycles during the test. Therefore, DOE proposes the following procedure based on cyclic testing data to clarify the test procedure, address cyclic stability, and offer default procedures to allow for test burden relief.

DOE has obtained cyclic test data that show that as cycles are tested, either capacity reaches steady-state or capacity fluctuates constantly and consistently. Therefore, DOE proposes that before determining C_D^c, three ''warm up'' cycles for a unit with a single-speed compressor or two-speed compressor or two ''warm up'' cycles for a unit with a variable speed compressor must be conducted. Then, conduct a minimum of three complete cycles after the warm-up period, taking a running average of C_D^c after each additional cycle. If after three cycles, the average of three cycles does not differ from the average of two cycles by more than 0.02, the three-cycle average should be used. If it differs by more than 0.02, up to two more valid cycles will be conducted. If the average C_D^c of the last three cycles are within 0.02 of or lower than the previous three cycles, use the average C_D^c of all valid cycles. After the fifth valid cycle, if the average C_D^c of the last three cycles is more than 0.02 higher than the previous three cycles, the default value will be used. The same changes are proposed for the test method to determine the heating coefficient of degradation.

Given these changes to address, DOE proposes that unlike the current test procedure, manufacturers must conduct the specified testing required to measure C_D for each tested unit. The default value may only be used if stability or the test tolerance is not achieved or when testing outdoor units with no match.

DOE requests comment regarding the proposed revisions to the cyclic test procedure for the determination of both the cooling and heating coefficient of degradation. DOE also requests additional test data that would support the proposed specifications, or changes to, the number of warm-up cycles, the cycle time for variable speed units, the number of cycles averaged to obtain the value, and the stability criteria.

11. Break-In Periods Prior to Testing

On June 1, 2012, AHRI submitted a supplement to the comments it submitted on January 20, 2012, as part of the extended comment period on the October 2011 SNOPR. In these supplementary comments, AHRI requested that DOE implement an optional 75-hour break-in period for testing central air conditioners and heat pumps. It stated that scroll compressors, which are the type of compressors most commonly used in central air conditioners and heat pumps, achieve their design efficiency after 75 hours of operation, so the allowance for a break-in period of this length would ensure that the product being tested is operating as intended by the manufacturer and would provide a result that is more representative of average use. AHRI also cited a study of compressor break-in periods to justify this period of time,[18] and added that, while AHRI's certification program for central air conditioners and heat pumps does not specify a minimum break-in period, it does allow manufacturers to specify a break-in period for their products. According to AHRI's comments, some manufacturers request a break-in period in excess of 100 hours, while others request 50 hours or less.

Furthermore, AHRI commented that implementation of an optional break-in period for central air conditioners and heat pumps would be consistent with a similar provision in the DOE test procedures for commercial heating and air-conditioning equipment, which DOE adopted in a final rule published May 16, 2012. 77 FR 28928. As stated in the final rule, the purpose of including this option for testing commercial HVAC equipment was to ensure that the equipment being tested would have time to achieve its optimal performance prior to conducting the test. DOE placed a maximum limit of 20 hours on the allowed period of break-in, regardless of the break-in period recommended by the manufacturer, explaining that such a limit was necessary to minimize the burden imposed by this provision. In addition, DOE required that manufacturers who use the optional break-in period report the duration of their break-in as part of the test data underlying the certification that is required to be maintained under 10 CFR 429.71. DOE stated that it would use the same break-in period for any DOE-initiated testing as the manufacturer used in its certified ratings or, in the case of ratings based upon use of an alternate efficiency determination method (AEDM), the maximum 20-hour break-in period. 77 FR 28928, 28944.

After consideration of the potential improvement in performance and increased test burden that may result from implementation of an optional 75-hour break-in period, DOE believes that the lengthy break-in period is not appropriate or justified. In reviewing the paper that AHRI cited in its comments, DOE noted that, while the data indicate that products with scroll compressors do appear to converge upon a more consistent result after compressor break-in periods exceeding 75 hours, the most significant improvement in compressor performance and reduction in variation among compressor models both appear to occur during roughly the first 20 hours of run time.[19] Moreover, scroll compressors in use at the time of this paper's publication in 1996 may have required longer break-in periods to address the surface quality of the internal components resulting from the manufacturing processes of that time, whereas compressors in use today have benefitted from improvements in the manufacturing technology for scroll compressors over the past 20 years. In addition, while the paper also supports AHRI's comment that smaller compressors require more time to reach their optimal performance than larger compressors, it does not show the absolute size of the compressors that were studied and makes comparisons based only on their relative sizes. Therefore, it is difficult to precisely determine how this data would apply to a central air conditioner or heat pump compressor versus a commercial air conditioner or heat pump. Finally, since DOE determined in the May 16, 2012 commercial HVAC equipment final rule that a 20 hour maximum break-in time would be sufficient for small commercial air-conditioning products, which are of a capacity similar to central air-conditioning products, DOE does not see justification for a break-in period longer than 20 hours for products. 77 FR 28928.

In consideration of AHRI's comments on the merits of conducting a break-in period prior to testing of central air conditioners and heat pumps, DOE proposes in this SNOPR to allow manufacturers the option of specifying a break-in period to be conducted prior to testing of these products under the DOE test procedure. However, due to the excessive test burden that could be imposed by allowing lengthy break-in times, DOE proposes to limit the optional break-in period to 20 hours, which is consistent with the test procedure final rule for commercial HVAC equipment. DOE also proposes to adopt the same provisions as the commercial HVAC rule regarding the requirement for manufacturers to report the use of a break-in period and its duration as part of the test data underlying their product certifications, the use of the same break-in period specified in product certifications for testing conducted by DOE, and use of the 20 hour break-in period for products certified using an AEDM.

DOE requests comments on its proposal to allow an optional break-in period of up to 20 hours prior to testing as part of the DOE test procedure for central air conditioners and heat pumps.

12. Industry Standards That Are Incorporated by Reference

In the June 2010 NOPR, DOE proposed two ''housekeeping'' updates throughout Appendix M regarding test procedure references. 75 FR 31243. The first is an update of the incorporation by reference (IBR) from ARI Standard 210/240–2006 to ANSI/AHRI 210/240–2008, which provides additional test unit installation requirements and requirements on apparatus used during testing. The second update involves changes to references from 10 CFR 430.22 to 10 CFR 430.3, as the listing of those materials incorporated by reference was relocated. In the public comment period following the NOPR, AHRI expressed support for updating the test procedure to reference current AHRI and ASHRAE standards. (AHRI, No. 6 at p. 6). DOE is maintaining its position in the June 2010 NOPR for both proposals and therefore implemented the reference updates in the reprint of Appendix M of this notice. However, DOE proposes in this SNOPR to incorporate by reference the 210/240 standard having the most recent amendments at the time of this notice, *i.e.,* ANSI/AHRI 210/240–2008 with Addendum 2.[20] The changes incorporated by these amendments relate to replacing the Integrated Part Load Value (IPLV) efficiency metric with the Integrated Energy Efficiency Ratio (IEER) metric, as well as adding the methodology for determining IEER for water- and evaporatively-cooled products. These changes are relevant only to commercial equipment and are not relevant to the DOE test procedure for central air conditioners and heat pumps. Therefore updating references to the latest version of ANSI/AHRI 210/240 will not impact the ratings or energy conservation standards for central air conditioners and heat pumps.

In addition, in this SNOPR, DOE proposes to update the IBR from ASHRAE Standard 37–2005, Methods of Testing for Rating Unitary Air-Conditioning and Heat Pump Equipment to ASHRAE Standard 37–2009, Methods of Testing for Rating Electrically Driven Unitary Air-Conditioning and Heat Pump

[18] Khalifa, H.E. ''Break-in Behavior of Scroll Compressors'' (1996). *International Compressor Engineering Conference.* Paper 1145.

[19] Ibid. pp. 442–443.

[20] ANSI/AHRI 210/240–2008 with Addendum 2 is named as such but includes changes per an Addendum 1 on the same standard.

Equipment; ASHRAE 41.9–2000, Calorimeter Test Standard Methods for Mass Flow Measurements of Volatile Refrigerants to ASHRAE 41.9–2011, Standard Methods for Volatile-Refrigerant Mass Flow Measurements Using Calorimeters; and ASHRAE/AMCA 51–1999/210–1999, Laboratory Methods of Testing Fans for Aerodynamic Performance Rating to ASHRAE/AMCA 51–07/210–07, Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating. None of these updates includes significant changes to the sections referenced in the DOE test procedure and thus will not impact the ratings or energy conservation standards for central air conditioners and heat pumps.[21]

Additionally, DOE proposes to update the IBR from ASHRAE 41.1–1986 (Reaffirmed 2006), Standard Method for Temperature Measurement to ASHRAE 41.1–2013, Standard Method for Temperature Measurement, as well as the IBR to ASHRAE 41.6–1994, Standard Method for Measurement of Moist Air Properties to ASHRAE 41.6–2014, Standard Method for Humidity Measurement. In the updated versions of these standards, specifications for measuring wet-bulb temperature were moved from ASHRAE 41.1 to ASHRAE 41.6. None of these updates includes significant changes to the sections referenced in the DOE test procedure and thus will not impact the ratings or energy conservation standards for central air conditioners and heat pumps.

Also, DOE proposes to update the IBR from ASHRAE 23–2005, Methods of Testing for Rating Positive Displacement Refrigerant Compressors and Condensing Units to ASHRAE 23.1–2010 Methods of Testing for Rating the Performance of Positive Displacement Refrigerant Compressors and Condensing Units That Operate at Subcritical Temperatures of the Refrigerant. ASHRAE 23 has been withdrawn and has been replaced by ASHRAE 23.1 and ASHRAE 23.2. ASHRAE 23.2 deals with supercritical pressure conditions, which are not relevant to the DOE test procedure, so will not be referenced. None of these updates includes significant changes to the sections referenced in the DOE test procedure and thus will not impact the ratings or energy conservation standards for central air conditioners and heat pumps.

[21] ASHRAE 37–2009 only updates to more recent versions of other standards it references. ASHRAE/AMCA 51–07/210–07 made slight changes to the figure referenced by DOE, which DOE has determined to be insignificant.

DOE also proposes to revise its existing IBRs to AHRI 210/240–2008 with Addendums 1 and 2, ANSI/AHRI 1230–2010 with Addendum 2, ASHRAE 23.1–2010 (updated from ASHRAE 23–2005), ASHRAE 37–2009 (updated from 2005), ASHRAE 41.1–2013 (updated from 1986 version), ASHRAE 41.2–1987, ASHRAE 41.6–2014 (updated from 1994 reaffirmed in 2001 version), ASHRAE 41.9–2011 (updated from 2000 version), and ASHRAE/AMCA 51–07/210–07 (updated from 1999 version) to incorporate only the sections currently referenced or proposed to be referenced in the DOE test procedure. DOE requests comment on its proposed sections for incorporation and specifically on whether any additional sections may be necessary to conduct a test of a unit.

DOE also proposes to revise the definition of ''continuously recorded'' based on changes to ASHRAE 41.1. ASHRAE 41.1–86 specified the maximum time intervals for sampling dry-bulb temperature. The updated version, ASHRAE 41.1–2013 does not contain specifications for sampling intervals. DOE proposes to require that dry-bulb temperature, wet bulb temperature, dew point temperature, and relative humidity data be ''continuously recorded,'' that is, sampled and recorded at 5 second intervals or less. DOE is proposing this requirement as a means of verifying that temperature condition requirements are met for the duration of the test. DOE requests comment on its revised sampling interval for dry-bulb temperature, wet bulb temperature, dew point temperature, and relative humidity.

13. Withdrawing References to ASHRAE Standard 116–1995 (RA 2005)

In the June 2010 NOPR, DOE proposed referencing ASHRAE Standard 116–1995 (RA 2005) within the DOE test procedure to provide additional informative guidance for the equations used to calculate SEER and HSPF for variable-speed systems. 75 FR 31223, 31243 (June 2, 2010). In the subsequent public comment period, AHRI expressed support for DOE's proposal to reference ASHRAE 116. (AHRI, No. 6 at p. 6). However, in section III.H.4 of this notice, DOE proposes to change the heating load line, and as such the equations for HSPF in ASHRAE Standard 116 are no longer applicable. In order to prevent confusion, DOE proposes in this notice to withdraw the proposal made in the June 2010 NOPR to reference ASHRAE 116 for both HSPF and SEER and is removing those instances of references to said standard from the test procedure.

Appendix M only references ASHRAE 116 in one other location, regarding the requirements for the air flow measuring apparatus. Upon review, DOE has determined that referencing ASHRAE Standard 37 instead provides sufficient information. As a result, in this NOPR, DOE also proposes to revise its reference for the requirements of the air flow measuring apparatus to ASHRAE Standard 37–2009 rather than ASHRAE 116, and proposes to remove the incorporation by reference to ASHRAE 116 from the code of federal regulations related to central air conditioners and heat pumps.

14. Additional Changes Based on AHRI 210/240-Draft

In August 2015, AHRI provided a draft version of AHRI 210/240 for the docket that will supersede the 2008 version once it is published. (AHRI Standard 210/240-Draft, No. 45, See EERE–2009–BT–TP–0004–0045) The draft version includes a number of revisions from the 2008 version, some of which already exist in DOE's test procedure, and some of which do not.

Regarding test installation requirements, the AHRI 210/240-Draft added new size requirements for the inlet duct to the indoor unit. If used, the inlet duct size to the indoor unit is required to equal the size of the inlet opening of the air-handling (blower-coil) unit or furnace, with a minimum length of 6 inches. Regarding the testing procedure, the AHRI 210/240-Draft added new external static pressure requirements for units intended to be installed with the airflow to the outdoor coil ducted. These new requirements provide for testing of these products more consistently with the way that they are intended to be used in the field. Also regarding the testing procedure, the AHRI 210/240-Draft specified a new requirement for the dew point temperature of the indoor test room when the air surrounding the indoor unit is not supplied from the same source as the air entering the indoor unit. DOE proposes to adopt these three revisions in this SNOPR.

The AHRI 210/240-Draft includes several differences as compared to the current DOE test procedure for setting air volume rates during testing. Specifically:

(a) Air volume rates would be specified by the manufacturer;

(b) For systems tested with indoor fans installed in which the fans have permanent-split-capacitor (PSC) or constant-torque motors, there would be minimum external static pressure requirements for operating modes other than full-load cooling; and

(c) A criterion is defined for acceptable air flow stability for systems tested with constant-air-volume indoor fans (these are fans with controls that vary fan speed to maintain a constant air volume rate).

DOE proposes to adopt these changes because they will improve repeatability and the consistency of testing among different laboratories.

The AHRI 210/240-Draft also includes a more thorough procedure for setting of refrigerant charge than exists in the DOE test procedure. The new approach addresses potential issues associated with conflicting guidelines that might be provided by manufacturer's installation instructions and indicates how to address ranges of target values provided in instructions. DOE is proposing these changes because they improve test repeatability. The AHRI 210/240-Draft also specifies both a target value tolerance and a maximum tolerance but does not specify in what circumstances each of these apply. DOE proposes to adopt the maximum tolerance only. However, DOE may consider adopting only the target value tolerance or both the target value and maximum tolerance. DOE requests comment on the appropriate use of the target value and maximum tolerances, as well as data to support the appropriate selection of tolerance. DOE notes that the tolerances adopted in the DOE test procedure should be achievable by test lab personnel without the presence or direct input of the manufacturer.

Finally, the AHRI 210/240-Draft includes specifications for air sampling that provide more detail than provided in existing standards. DOE proposes to incorporate these specifications by reference in order to improve test procedure repeatability and consistency. The proposal currently cites the AHRI 210/240-Draft, which is not possible for the final rule associated with this rulemaking. However, DOE expects that the AHRI standard will be finalized in time to allow the final rule to amend the CFR to incorporate this material.

DOE notes that the final published version of what is currently the AHRI 210/240-Draft may not be identical to the current draft. If AHRI makes other than minor editorial changes to the sections DOE references in this SNOPR after publication of this SNOPR, DOE proposes to adopt the current draft content into its regulations and not incorporate by reference the modified test procedure.

15. Damping Pressure Transducer Signals

ASHRAE 37–2009, which DOE proposes in this SNOPR to be incorporated by reference into the DOE test procedure, includes requirements for maximum allowable variation of specific measurements for a valid test. Specifically, Table 2 of the standard indicates that the test operating tolerance (total observed range) of the nozzle pressure drop may be no more than 2 percent of the average value of reading. Section 5.3.1 of the standard indicates that the nozzle pressure drop (or the nozzle throat velocity pressure) may be measured with manometers or electronic pressure transducers. These measurements are made to determine air flow. Section 8.7.2 of the standard requires that measurements shall be recorded at equal intervals that span five minutes or less when evaluating cooling capacity.

DOE is aware that when nozzle pressure drop measurements are made with pressure transducers and recorded using a computer-based data acquisition system, high frequency pressure fluctuations can cause observed pressure variations in excess of the 2 percent test operating tolerance, even when air flows are steady and non-varying. DOE proposes to add clarifying language in the test procedure that would allow for damping of the measurement system to prevent such high-frequency fluctuations from affecting recorded pressure measurements. The proposal would allow for damping of the measurement system so that the time constant for response to a step change in pressure (*i.e.* the time required for the indicated measurement to change 63% of the way from its initial value to its final value) is no more than five seconds. This damping could be achieved in any portion of the measurement system. Examples of damping approaches include adding flow resistance to the pressure signal tubing between the pressure tap and the transducer, using a transducer with internal averaging of its output, or filtering the transducer output signal, digital averaging of the measured pressure signals. DOE requests comment on this proposal, including on whether the proposed maximum time constant is appropriate.

F. Clarification of Test Procedure Provisions

Ensuring repeatability of test results requires that all parties that test a unit use the same set of instructions to set up the unit, conduct the test, and calculate test results. A test laboratory may be tempted to contact the product's manufacturer or other sources of information not referenced or allowed by the test procedure if there is a lack of clarity in the installation instructions shipped with the unit or ambiguities within the test procedure itself. Currently, certain sections of the DOE test procedure for central air conditioners and heat pumps in Appendix M to Subpart B of 10 CFR part 430 permit such consultation with the manufacturer. In the June 2010 NOPR, DOE proposed to allow lab-manufacturer communication as long as test unit installation and laboratory testing are conducted in complete compliance with all requirements in the DOE test procedure and the unit is installed according to the manufacturer's installation instructions. 75 FR 31223, 31235 (June 2, 2010). In the subsequent public comment period, AHRI expressed support regarding DOE's proposal. (AHRI, No. 6 at p. 3). Mitsubishi also supported adding test procedure to clarify that interaction with the manufacturer is allowed. (Mitsubishi, No. 12 at p. 2). NEEA did not object to DOE's proposal. (NEEA, No. 7 at p. 4). Because the reliance upon such consultation could lead to variability in test results among laboratories by manufacturers providing different testing instructions, DOE seeks to limit such occurrences to the maximum extent possible by ensuring that all required testing conditions and product setup information is either specified in the test procedure, certified to DOE, or stated in installation manuals shipped with the unit by the manufacturer. DOE believes that the proposed revisions in this rule provide such clarity and allow for models to be tested and rated in an equitable manner across manufacturers. Upon implementing such clarifications, laboratories will no longer need to contact the manufacturer for advice on implementation of the test procedure. If questions arise about a specific test procedure provision, the test lab and/or the manufacturer should seek guidance from DOE. DOE believes that this change will eliminate inconsistent testing due to different test laboratories seeking and receiving different information regarding unclear instructions. Thus, DOE proposes the following changes to the test procedure to address test procedure provisions that may be ambiguous or unclear in their intent and also withdraws the proposal it made in the June 2010 NOPR that placed no restrictions on interactions between manufacturers and third-party test laboratories 75 FR at 31235.

1. Manufacturer Consultation

DOE proposes to clarify the test procedure provisions regarding the specifications for refrigerant charging prior to testing, with input on certain details from the AHRI 210/240-Draft, as discussed in section III*.E.*14. Section 2.2.5 of the test procedure provides refrigerant charging instructions but also states, ''For third-party testing, the test laboratory may consult with the manufacturer about the refrigerant charging procedure and make any needed corrections so long as they do not contradict the published installation instructions.'' The more thorough refrigerant charging requirements proposed in this notice should preclude the need for any manufacturer consultation, since they include steps to take in cases where manufacturer's installation instructions fail to provide information regarding refrigerant charging or provide conflicting requirements. Consultation with the manufacturer should thus become unnecessary, and DOE proposes to remove the current test procedure's allowance for contacting the manufacturer to receive charging instructions. In instances where multiple sets of instructions are specified or are included with the unit and the instructions are unclear on which set to test with, DOE proposed in the June 2010 NOPR to use the instructions ''most appropriate for a normal field installation.'' 75 FR 31235, 31250. (June 2, 2010) NEEA supported this proposal. (NEEA, No. 7 at p. 4). DOE proposes to maintain this position in this rulemaking, proposing the use of field installation criteria if instructions are provided for both field and lab testing applications.

In the June 2010 NOPR, DOE proposed requirements for the low-voltage transformer used when testing coil-only air conditioners and heat pumps, and required metering of such low-voltage component energy consumption during all tests. 75 FR 31238. In the April 2011 SNOPR, in response to the June 2010 NOPR public meeting comments, DOE proposed revised requirements such that metering of low-voltage component energy consumption is required during only the proposed off mode testing, citing that such changes would require adjustments to the standard levels currently being considered. 76 FR 18109. The proposal therein consisted of language that suggested that test setup information may be obtained directly from manufacturers. In the effort to remain objective during testing, DOE is hereby revising certain language in the proposal such that communication between third party test laboratories and manufacturers are eliminated, and such information when needed for test setup can be found in the installation manuals included with the unit by the manufacturer.

Regarding the use of an inlet plenum, section 2.4.2 of the test procedure states, ''When testing a ducted unit having an indoor fan (and the indoor coil is in the indoor test room), the manufacturer has the option to test with or without an inlet plenum installed. Space limitations within the test room may dictate that the manufacturer choose the latter option.'' To eliminate the need for the test laboratory to confirm with the manufacturer whether the inlet plenum was installed during the manufacturer's test, DOE proposes to require manufacturers to report on their certification report whether the test was conducted with or without an inlet plenum installed.

Further, it is unclear in certain sections of the test procedure which ''test setup instructions'' are to be referenced for preparing the unit for testing. Ambiguous references to ''test setup instructions'' and/or ''manufacturer specifications'' may lead to the use of instructions or specifications provided by the manufacturer that are possibly out-of-date or otherwise not applicable to the products being tested. DOE therefore proposes to amend references in the test procedure to test setup instructions or manufacturer specifications by specifying that these refer to the test setup instructions included with the unit. DOE proposes to implement this change in the following sections: 2.2.2, 3.1.4.2(c), 3.1.4.4.2(c), 3.1.4.5(d), and 3.5.1(b)(3).

2. Incorporation by Reference of ANSI/AHRI Standard 1230–2010

ANSI/AHRI Standard 1230–2010 ''Performance Rating of Variable Refrigerant Flow (VFR) Multi-Split Air-Conditioning and Heat Pump Equipment'' with Addendum 2 (AHRI Standard 1230–2010) prescribes test requirements for both consumer and commercial variable refrigerant flow multi-split systems. On May 16, 2012, DOE incorporated this standard by reference into test procedures for testing commercial variable refrigerant flow multi-split systems at 10 CFR 431.96. 77 FR 28928. DOE recognizes that consumer variable refrigerant flow multi-split systems have similarities to their commercial counterparts. Therefore, to maintain consistency of testing consumer and commercial variable refrigerant flow multi-split systems, DOE proposes to incorporate by reference the sections of AHRI Standard 1230–2010 that are relevant to consumer variable refrigerant flow multi-split systems (namely, sections 3 (except 3.8, 3.9, 3.13, 3.14, 3.15, 3.16, 3.23, 3.24, 3.26, 3.27, 3.28, 3.29, 3.30, and 3.31), 5.1.3, 5.1.4, 6.1.5 (except Table 8), 6.1.6, and 6.2) into the existing test procedure for central air conditioners and heat pumps at Appendix M to Subpart B of 10 CFR part 430. To ensure that there is no confusion with future definition changes in industry test procedures, DOE is including the terms ''Multiple-split (or multi-split) system'', ''Small-duct, high-velocity system'', ''Tested combination'', ''Variable refrigerant flow system'' and ''Variable-speed compressor system'' into its list of definitions in Appendix M to Subpart B of 10 CFR part 430.

10 CFR 429.16 requires the use of a ''tested combination,'' as defined in 10 CFR 430, subpart B, Appendix M, section 1.B, when rating multi-split systems. In response to a May 27, 2008 letter from AHRI to DOE, DOE proposed changes in the ''tested combination'' definition in the June 2010 NOPR. 75 FR 31223, 31231 (June 2, 2010). In comments responding to the NOPR, AHRI urged DOE to adopt AHRI Standard 1230–2010 for all requirements pertaining to multi-split systems. (AHRI, No. 6 at pp. 1–2) Mitsubishi recommended likewise. (Mitsubishi, No. 12 at p. 1) AHRI Standard 1230–2010, published after the June 2010 NOPR, duplicates most of the requirements for tested combinations that DOE proposed in the June 2010 NOPR except for the following requirements, which DOE proposes in this notice to adopt to reduce manufacturer test burden: lower the maximum number of indoor units matched to an outdoor unit; and the option to use another indoor model family if units from the highest sales volume model family cannot be combined so that the sum of their nominal capacities is in the required range of the outdoor unit's nominal capacity (between 95 and 105 percent). The proposal in June 2010 NOPR also used the term ''nominal cooling capacity,'' which may be ambiguous; DOE also intends to clarify that such a term should be interpreted as the highest cooling capacity listed in published product literature for 95 °F outdoor dry bulb temperature and 80 °F dry bulb, 67 °F wet bulb indoor conditions, and for outdoor units as the lowest cooling capacity listed in published product literature for these

conditions. If incomplete or no operating conditions are reported, the highest (for indoor units) or lowest (for outdoor units) such cooing capacity shall be used. Finally, AHRI 1230 uses the term ''model family'' but does not define the term. DOE requests comment on an appropriate definition of ''model family'' for DOE to adopt in the final rule. In summary, DOE proposes to omit AHRI's definition of tested combination, found in section 3.26, from the IBR of AHRI Standard 1230–2010 into Appendix M to Subpart B of 10 CFR part 430, and make amendments to the proposal from the June 2010 NOPR.

During testing for ducted systems with indoor fans installed, the rise in static pressure between the air inlet and the outlet (called external static pressure (ESP)) must be adjusted to a prescribed minimum that varies with system cooling capacity. The minimum ESPs are 0.10 in. wc. for units with cooling capacity less than 28,800 Btu/h; 0.15 in. wc. for units with cooling capacity from 29,000 Btu/h to 42,500 Btu/h; and 0.20 in. wc. for units with cooling capacity greater than 43,000 Btu/h. Multi-split systems are composed of multiple indoor units, which may be designed for installation with short-run ducts. Such indoor units generally cannot deliver the minimum ESPs prescribed by the current test procedure. Hence, lower minimum ESP requirements may be necessary for testing of ducted multi-split systems.

In the June 2010 NOPR, DOE proposed lower minimum ESP requirements for ducted multi-split systems: 0.03 in. wc. for units less than 28,800 Btu/h; 0.05 in. wc. for units between 29,000 Btu/h and 42,500 Btu/h; and 0.07 in. wc. for units greater than 43,000 Btu/h. 75 FR at 31232. In its comments, AHRI urged DOE to adopt the minimum ESP requirements from AHRI Standard 1230–2010 as DOE was aware that the standard was being developed at that time. AHRI expressed concern over the potential abuse of lower multi-split minimum ESPs requirements by manufacturers of ducted single-indoor-unit split-system products. Specifically, they were concerned that the lower ESP were allowed for very specific installation applications which could not be assured by the manufacturer, and thus might be used more widely than intended. AHRI therefore argued against changing ESP requirements. (AHRI, No. 6 at p. 2). Mitsubishi recommended likewise. (Mitsubishi, No. 12 at p. 2). NEEA recommended establishing minimum ESP requirements that are the same as those of conventional systems. (NEEA, No. 7 at p. 2) AHRI Standard 1230–2010 does not include minimum ESP requirements for multi-split systems with short-run ducted indoor units. In order to accommodate the design differences of these indoor units, DOE proposes to omit Table 8 of AHRI Standard 1230–2010 from the IBR into Appendix M and to set minimum ESP requirements for systems with short-run ducted indoor units at the levels and cooling capacity thresholds as proposed in the June 2010 NOPR. Furthermore, DOE proposes to implement these requirements by (a) defining the term ''Short duct systems,'' to refer to ducted systems whose indoor units can deliver no more than 0.07 in. wc. ESP when delivering the full load air volume rate for cooling operation, and (b) adding the NOPR-proposed minimum ESP levels to Table 3 of Appendix M (this is the table that specifies minimum ESP), indicating that these minimum ESPs are for short duct systems. DOE proposes using the new term ''Short duct system'' rather than ''Multi-split system'' for these minimum ESPs because multi-circuit or mini-split systems could potentially also include similar short-ducted indoor units. DOE proposes a limitation in the level of ESP that eligible indoor units can deliver in order to prevent the potential abuse of the reduced ESP requirement mentioned by AHRI. DOE requests comment on these proposals, including the value of maximum ESP attainable by eligible systems.

DOE notes that in conjunction with the adopted portions of the AHRI Standard 1230–2010 , the following sections of the proposed test procedure found in Appendix M may apply to testing VRF multi-split systems: section 1 (definitions); section 3.12 (rounding of space conditioning capacities for reporting purposes); sections 2.2.a, 2.2.b, 2.2.c, 2.2.1, 2.2.2, 2.2.3(a), 2.2.3(c), 2.2.4, 2.2.5, and 2.4 to 2.12 (test unit installation requirements); Table 3 in section 3.1.4.1.1c (external static pressure requirements); section 3.1 except section 3.1.3 and 3.1.4 (general requirements of the testing procedure); sections 3.3, 3.4, and 3.5 (procedures for cooling-mode tests); sections 3.7, 3.8, 3.9, and 3.10 (procedures for heating-mode tests); section 3.13 (procedure for off mode average power rating); and section 4 (calculations of seasonal performance descriptors).

DOE requests comment on the incorporation by reference of AHRI 1230–2010, and in particular the specific sections of Appendix M and AHRI 1230–2010 that DOE proposes to apply to testing VRF systems.

3. Replacement of the Informative Guidance Table for Using the Federal Test Procedure

The intent of the set of four tables at the beginning of ''Section 2, Testing Conditions'' of the current test procedure (10 CFR part 430, subpart B, Appendix M) is to provide guidance to manufacturers regarding testing conditions, testing procedures, and calculations appropriate to a product class, system configuration, modulation capability, and special features of products. DOE recognizes that the current table format may be difficult to follow. Therefore, DOE has developed a more concise table and proposes using it in place of the current table. DOE requests comment on this proposed change and/or whether additional modifications to the new table could be implemented to further improve clarity.

4. Clarifying the Definition of a Mini-Split System

Current definitions in 10 CFR part 430, subpart B, Appendix M define a mini-split air conditioner and heat pump as ''a system that has a single outdoor section and one or more indoor sections, which cycle on and off in unison in response to a single indoor thermostat.'' When DOE introduced this definition, mini-split systems solely employed one or more non-ducted or short-duct wall-, ceiling-, or floor-mounted indoor units (*i.e.,* non-conventional units), and the market for mini-split products reflected such type and quantity of indoor units. It was common understanding that when testing or purchasing a mini-split system, the system would have a non-conventional indoor unit.

Nevertheless, DOE recognizes that further clarification and specificity in terminology would alleviate ambiguity in how to categorize mini-split products. To differentiate the two types of products, DOE proposes deleting the definition of mini-split air conditioners and heat pumps, and adding two definitions for: (1) Single-zone-multiple-coil split-system, representing a split-system that has one outdoor unit and that has two or more coil-only or blower coil indoor units connected with a single refrigeration circuit, where the indoor units operate in unison in response to a single indoor thermostat; and (2) single-split-system, representing a split-system that has one outdoor unit and that has one coil-only or blower coil indoor unit connected to its other component(s) with a single refrigeration circuit. DOE seeks comment on this proposal.

5. Clarifying the Definition of a Multi-Split System

A multiple-split (or multi-split) system is currently defined in 10 CFR part 430, subpart B, Appendix M as ''a split-system having two or more indoor units, which respond to multiple thermostats.'' Technologies exist on the market that operate like multi-split systems but incorporate multiple outdoor units into the same package. To clearly define what arrangement qualifies as a multi-split system, DOE proposes to clarify the definition of multi-split system to specify that multi-split systems are to have only one outdoor unit. (DOE notes that it proposes to separately define multi-circuit units as units that incorporate multiple outdoor units into the same package. This is discussed in section III.C.2.) Finally, DOE proposes to clarify that if a model of outdoor unit could be used both for single-zone-multiple-coil split-systems and for multi-split-systems, it should be tested as a multi-split system.

G. Test Procedure Reprint

The test procedure changes proposed in this SNOPR as well as in the June 2010 NOPR, April 2011 SNOPR, and October 2011 SNOPR occur throughout large portions of Appendix M to 10 CFR part 430 Subpart B. In order to improve clarity regarding the proposed test procedure, in the regulatory text for this SNOPR, DOE has reprinted the entirety of Appendix M, including all changes proposed in this SNOPR as well as those in the previous NOPR and SNOPRs that are still applicable. Table III.6 lists those proposals from the previous notices that appear without modification in this regulatory text reprint, and provides reference to the respective revised section(s) in the regulatory text. Table III.7 lists those proposals from the previous notices that either are proposed to be withdrawn or amended in this SNOPR or propose no amendments to the test procedure, and provides reference to the respective preamble section for the discussion of the revision, including stakeholder comments from the original proposal, and the revised section(s) in the regulatory text, if any. The proposed amendments to Appendix M would not change the rated values.

Because Appendix M1, as discussed in I.A, is substantially similar to Appendix M, DOE is only printing the proposed regulatory text for Appendix M1 where it differs from the proposed regulatory text for Appendix M. Proposed changes relevant to Appendix M1 are discussed in section III.H.

TABLE III.6—PROPOSALS FROM PRIOR NOTICES ADOPTED WITHOUT MODIFICATION IN THIS SNOPR

Section	Proposal to . . .	Reference	Action	Preamble discussion	Regulatory text location *
June 2010 NOPR					
A.7	Add Calculations for Sensible Heat Ratio.	75 FR 31229	Upheld	III.I.5	3.3c, 4.6.
A.10	Add Definitions Terms Regarding Standby Power.	75 FR 31231	Upheld	None	Definitions.
B.4	Allow a Wider Tolerance on Air Volume Rate To Yield More Repeatable Laboratory Setups.	75 FR 31233	Upheld	None	3.1.4.1.1a.4b.
B.5	Change the Magnitude of the Test Operating Tolerance Specified for the External Resistance to Airflow.	75 FR 31234	Upheld	None	3.3d Table, 3.5h Table, 3.7a Table, 3.8.1 Table, 3.9f Table.
	Change the Magnitude of the Test Operating Tolerance Specified for the Nozzle Pressure Drop.	75 FR 31234	Upheld	None	3.3d Table, 3.5h Table, 3.7a Table, 3.8.1 Table.
B.6	Modify Refrigerant Charging Procedures: Disallow Charge Manipulation after the Initial Charge.	75 FR 31234	Upheld	III.E.7	2.2.5.
B.7	Require All Tests be Performed with the Same Refrigerant Charge Amount.	75 FR 31235, 31250.	Upheld	III.F.1	2.2.5.8.
B.8	When Determining the Cyclic Degradation Coefficient CD, Correct the Indoor-Side Temperature Sensors Used During the Cyclic Test To Align With the Temperature Sensors Used During the Companion Steady-State Test, If Applicable: Equation.	75 FR 31235	Upheld	None	3.4c, 3.5i, 3.7e, 3.8.
	When Determining the Cyclic Degradation Coefficient CD, Correct the Indoor-Side Temperature Sensors Used During the Cyclic Test To Align With the Temperature Sensors Used During the Companion Steady-State Test, If Applicable: Sampling Rate.	75 FR 31236	Upheld	None	3.3b, 3.7a, 3.9e, 3.11.1.1, 3.11.1.3, 3.11.2a.
B.9	Clarify Inputs for the Demand Defrost Credit Equation.	75 FR 31236	Upheld	None	3.9.2a.
B.10	Add Calculations for Sensible Heat Ratio.	75 FR 31237	Upheld	III.I.5	3.3c, 4.6.
B.11	Incorporate Changes To Cover Testing and Rating of Ducted Systems Having More Than One Indoor Blower.	75 FR 31237	Upheld	III.C.3	2.2.3, 2.2.3b, 2.4.1b, 3.1.4.1.1d, 3.1.4.2e, 3.1.4.4.2d, 3.1.4.5.2f, 3.2.2, 3.2.2.1, 3.6.2, 3.2.6, 3.6.7, 4.1.5, 4.1.5.1, 4.1.5.2, 4.2.7, 4.2.7.1, 4.2.7.2, 3.2.2.2 Table, 3.6.2 Table.
B.12	Add Changes To Cover Triple-Capacity, Northern Heat Pumps.	75 FR 31238	Upheld	III.C.4	3.6.6, 4.2.6.
B.13	Specify Requirements for the Low-Voltage Transformer Used When Testing for Off-Mode Power Consumption.	75 FR 31238	Upheld	III.F.1	2.2d.

TABLE III.6—PROPOSALS FROM PRIOR NOTICES ADOPTED WITHOUT MODIFICATION IN THIS SNOPR—Continued

Section	Proposal to . . .	Reference	Action	Preamble discussion	Regulatory text location*
B.14	Add Testing Procedures and Calculations for Off Mode Power Consumption.	75 FR 31238	Upheld	III.D	Definitions, 3.13, 4.3, 4.4.
		April 2011 SNOPR			
III.A	Revise Test Methods and Calculations for Off-Mode Power and Energy Consumption.	76 FR 18107	Upheld	III.D	Definitions, 3.13, 4.3, 4.4.
III.B	Revise Requirements for Selecting the Low-Voltage Transformer Used During Off-Mode Test(s).	76 FR 18109	Upheld	III.F.1	2.2d.
III.D	Add Calculation of the Energy Efficiency Ratio for Cooling Mode Steady-State Tests.	76 FR 18111	Upheld	None	4.7.
III.E	Revise Off-Mode Performance Ratings	75 FR 31238	Upheld	III.D	Definitions, 3.13, 4.3, 4.4.
		October 2011 SNOPR			
III.A	Reduce Testing Burden and Complexity.	76 FR 65618	Upheld	III.D	Definitions, 3.13, 4.3, 4.4.
III.B	Add Provisions for Individual Component Testing.	76 FR 65619	Upheld	III.D	Definitions, 3.13, 4.3, 4.4.
III.C	Add Provisions for Length of Shoulder and Heating Seasons.	76 FR 65620	Upheld	III.D	Definitions, 3.13, 4.3, 4.4.
III.D	Revise Test Methods and Calculations for Off-Mode Power and Energy Consumption.	76 FR 65620	Upheld	III.D	Definitions, 3.13, 4.3, 4.4.
III.D.1	Add Provisions for Large Tonnage Systems.	76 FR 65621	Upheld	III.D	Definitions, 3.13, 4.3, 4.4.
III.D.2	Add Requirements for Multi-Compressor Systems.	76 FR 65622	Upheld	III.D	Definitions, 3.13, 4.3, 4.4.

*Section numbers in this column refer to the proposed Appendix M test procedure in this notice.

TABLE III.7—PROPOSALS FROM PRIOR NOTICES WITHDRAWN OR AMENDED IN THIS SNOPR OR PROPOSED NO CHANGE TO THE TEST PROCEDURE

Section	Proposal to . . .	Reference	Action	Preamble discussion	Regulatory text location*
		June 2010 NOPR			
A.1	Set a Schedule for Coordinating the Publication of the Test Procedure and Energy Conservation Standards.	75 FR 31227	No Change**	None	None.
A.2	Bench Testing of Third-Party Coils	75 FR 31227	No Change**	None	None.
A.3	No Change to Default Values for Fan Power.	75 FR 31227	Amended	III.H.3	*10 CFR Part 430, Subpart B, Appendix M1* 3.3d, 3.5.1, 3.7c, 3.9.1b.
A.4	No Change to External Static Pressure Values.	75 FR 31228	Amended	III.H.1	*10 CFR Part 430, Subpart B, Appendix M1* 3.1.4.1.1c. Table.
A.5	No Conversion to Wet-Coil Cyclic Testing.	75 FR 31228	No Change**	III.I.4	None.
A.6	No Change to Test Procedure for Testing Systems with "Inverter-Driven Compressor Technology".	75 FR 31229	No Change**	None	None.
A.8	Regional Rating Procedure	75 FR 31229	Withdrawn †	None	None.
A.9	Modify Definition of Tested Combination.	75 FR 31230	Amended	III.F.2	*10 CFR 430.2* Definitions.
	Add Minimum ESP for Short Duct Systems.	75 FR 31230	Amended	III.F.2	3.1.4.1.1c. Table.
	Clarify That Optional Tests May Be Conducted without Forfeiting Use of the Default Value(s).	75 FR 31230	Withdrawn †	None	None.
B.1	Modify the Definition of "Tested Combination".	75 FR 31231	Amended	III.F.2	*10 CFR 430.2* Definitions.
B.2	Add Minimum ESP for Short Duct Systems.	75 FR 31232	Amended	III.F.2	3.1.4.1.1c. Table.
	Add Indoor Unit Design Characteristics for Limiting Application of Minimum ESP for Short Duct Systems.	75 FR 31232	Amended	III.F.2	3.1.4.1.1c. Table header.
B.3	Clarify That Optional Tests May Be Conducted Without Forfeiting Use of the Default Value(s).	75 FR 31233	Withdrawn †	None	None.
B.6	No Adoption of Requirement of Manufacturer Sign-Off after Charging Refrigerant.	75 FR 31234	No Change**	None	None.
B.7	Allow Interactions between Manufacturers and Third-Party Testing Laboratory.	75 FR 31235	Withdrawn	III.F	None.

TABLE III.7—PROPOSALS FROM PRIOR NOTICES WITHDRAWN OR AMENDED IN THIS SNOPR OR PROPOSED NO CHANGE TO THE TEST PROCEDURE—Continued

Section	Proposal to . . .	Reference	Action	Preamble discussion	Regulatory text location *
B.15	Add Parameters for Establishing Regional Standards.	75 FR 31239	Withdrawn †	None	None.
B.15a	Use a Bin Method for Single-Speed SEER Calculations for the Hot-Dry Region and National Rating.	75 FR 31240	Withdrawn †	None	None.
B.15b	Add New Hot-Dry Region Bin Data	75 FR 31240	Withdrawn †	None	None.
B.15c	Add Optional Testing at the A and B Test Conditions With the Unit in a Hot-Dry Region Setup.	75 FR 31241	Withdrawn †	None	None.
B.15d	Add a New Equation for Building Load Line in the Hot-Dry Region.	75 FR 31242	Withdrawn †	None	None.
B.16	Add References to ASHRAE 116–1995 for Equations That Calculate SEER and HSPF for Variable Speed Systems.	75 FR 31243	Withdrawn	III.*E*.13	None.
B.17	Update Test Procedure References	75 FR 31243	Amended	III.*E*.12	*10 CFR 430.3* Definitions.
April 2011 SNOPR					
III.C	Withdraw of the Proposal To Add the New Regional Performance Metric SEER Hot-Dry.	76 FR 18110	No Change **	None	None.
October 2011 SNOPR					
Proposals are Upheld					

* Section numbers in this column refer to the proposed Appendix M test procedure in this Notice, unless otherwise specified.
** These items were discussed in the NOPR or SNOPR but did not propose changes to the test procedure.
† Associated proposals regarding the SEER Hot-Dry metric, as indicated, are withdrawn because DOE withdrew the SEER Hot-Dry metric in the April 2011 SNOPR. 76 FR 18110.

H. Improving Field Representativeness of the Test Procedure

DOE received comments from stakeholders during the public comment period following the November 2014 ECS RFI requesting changes to the test procedure that would improve field representativeness. Such changes would impact the rated efficiency of central air conditioners and heat pumps. As discussed in section I.A, any amendments proposed in this SNOPR that would alter the measured efficiency, as represented in the regulating metrics of EER, SEER, and HSPF, are proposed as part of a new Appendix M1 to Subpart B of 10 CFR part 430. The test procedure changes proposed as part of a new Appendix M1, if adopted, would not become mandatory until the existing energy conservation standards are revised to account for the changes to rated values. (42 U.S.C. 6293(e)(2)) These changes, including the relevant stakeholder comments, are discussed in the following subsections.

1. Minimum External Static Pressure Requirements for Conventional Central Air Conditioners and Heat Pumps

Most of the central air conditioners and heat pumps used in the United States use ductwork to distribute air in a residence, using either a fan inside the indoor unit or housed in a separate component, such as a furnace, to move the air. External static pressure (ESP) for a central air conditioner or heat pump is the static pressure rise between the inlet and outlet of the indoor unit that is needed to overcome frictional losses in the ductwork. The ESP imposed by the ductwork affects the power consumed by the indoor blower, and therefore also affects the SEER and/or HSPF of a central air conditioner or heat pump.

The current DOE test procedure [22] stipulates that certification tests for central air conditioners and heat pumps which are not short duct systems (see section III.F.2) or small-duct, high-velocity systems [23] (*i.e.,* conventional central air conditioners and heat pumps) must be performed with an ESP at or above 0.10 in. wc. if cooling capacity is rated at 28,800 Btu/h or less; at or above 0.15 in. wc. if cooling capacity is rated from 29,000 Btu/h to 42,500 Btu/h; and at or above 0.20 in. wc. if cooling capacity is rated at 43,000 Btu/h or more.

[22] Table 3 of 10 CFR 430 Subpart B Appendix M

[23] 10 CFR 430 Subpart B Appendix M Section 1. Definitions defines a small-duct, high-velocity system as a system that contains a blower and indoor coil combination that is designed for, and produces, at least 1.2 inches (of water) of external static pressure when operated at the full-load air volume rate of 220–350 cfm per rated ton of cooling. When applied in the field, small-duct products use high-velocity room outlets (*i.e.,* generally greater than 1000 fpm) having less than 6.0 square inches of free area.

DOE decided in the June 2010 NOPR not to propose revisions to minimum external static pressure requirements, stating that new values and a consensus standard were not readily available. 75 FR 13223, 31228 (June 2, 2010). NEEA responded during the subsequent public comment period that current ESP minimums were too low and recommended DOE adopt an ESP test requirement of 0.5 in. wc. (NEEA, No. 7 at p. 3). Earthjustice commented that retention of the existing ESP values is not supported by evidence. (Earthjustice, No. 15 at pp. 1–2). Southern California Edison (SCE), the Southern California Gas Company (SCGC), and San Diego Gas and Electric (SDGE) (together, the Joint California Utilities) included with its comments two studies showing field measurements of ESP with an average of 0.5–0.8 in. w.c and urged the Department to adopt an external static pressure test point of 0.5 in. wc. (Joint California Utilities, No. 9 at p. 3). ACEEE suggested that field data is available for DOE to consider new values of ESP. (ACEEE, No. 8 at pp. 2–3).

Stakeholders also commented in response to the November 2014 ECS RFI that the current requirements for minimum ESP are unrepresentative of field practice. PG&E commented that the ESP for central air conditioners and heat pumps needs to be set at 0.5 in. wc. or higher for ducted systems. (Docket No. EERE–2014–BT–STD–0048, PG&E, No. 15 at p. 3) ACEEE advocated similarly: Default ESP used in the current federal test procedure should be raised from the current 0.1 to 0.2 in. wc. to at least 0.5 in. wc. to represent field practice. (*Id.;* ACEEE, No. 21 at p. 2) ASAP & ASE & NRDC commented that the ESP in the current test procedure is unrealistically low, adding that DOE should reference to the ESP values adopted by the recently finalized furnace fan rulemaking which has an ESP value of 0.5 in. wc.[24] (*Id.;* ASAP & ASE & NRDC, No. 20 at p. 1).

Central air conditioners and heat pumps are generally equipped with air filters when used in the field. Section 3.1.4.1.1c of 10 CFR part 430, subpart B, Appendix M requires that any unit tested without an air filter installed be tested with ESP increased by 0.08 in. wc. to represent the filter pressure drop. University of Alabama commented during the public comment period of the November 2014 ECS RFI that the actual combined ESP requirements in the field are typically 3 to 5 times greater with more effective filters and typical duct designs. The unrealistically low rating conditions result in little incentive for manufacturers to incorporate improved fan wheel designs. Improvements in SEER gained by replacing inexpensive forward-curve fan wheels will be negligible but demand and energy savings in actual installations will be significant. (Docket No. EERE–2014–BT–STD–0048, University of Alabama, No. 6 at p. 1).

Furnaces use the same ductwork as central air conditioners and heat pumps to distribute air in a residence. NEEA & NPCC commented that the ESP selected for testing of furnace fans is substantially higher than the 0.1 to 0.2 in. wc. prescribed by the federal CAC/HP test procedure. They also mentioned that field data from Pacific Northwest shows that the minimum required ESP is 0.5 in. wc. regardless of system capacity. NEEA & NPCC recommended that the ESP requirement for measurement of cooling efficiency be close to 0.6 in. wc. because air volume rates for cooling (and heating for heat pumps) are greater than typical furnace heating air volume rates. However, they suggested DOE adopt the ESP level required for testing of furnace fans as a simple approach. (Docket No. EERE–2014–BT–STD–0048, NEEA & NPCC, No. 19 at p. 2).

In response to stakeholder comment over multiple public meetings that the minimum ESP values intended for testing are indeed unrepresentative of the ESPs in field installations, and field studies indeed demonstrating the same, DOE proposes in this SNOPR revising the ESP requirements for most central air conditioners and heat pumps, *e.g.,* those that do not meet the proposed requirements for short duct systems or the established requirements for small-duct, high-velocity (SDHV) systems.

DOE is not considering revising the minimum ESP requirement for SDHV systems. DOE is, however, proposing to establish a new category of ducted systems, short duct systems, which would have lower ESP requirements for testing—this is discussed in section III.F.2.

To meet the requirement set forth in 42 U.S.C. 6293(b)(3) providing that test procedures be reasonably designed to produce test results which measure energy efficiency of a covered product during a representative average period of use, DOE reviewed available field data to determine appropriate ESP values. DOE gathered field studies and research reports, where publically available, to estimate field ESPs. DOE previously reviewed most of these studies when developing test requirements for furnace fans. The 20 studies, published from 1995 to 2007, provided 1,010 assessments of location and construction characteristics of central air conditioner or heat pump systems in residences, with the data collected varying by location, representation of system static pressure measurements, and equipment's age and ductwork arrangement, vintage, and air-tightness. 79 FR 500 (Jan. 3, 2014). DOE observed measured ESPs to range from 0.20 to 0.70 in. wc. DOE used three statistical approaches to determine an average representation of ESP from the range of ESPs: a simple-average approach, a sample-size-exclusion approach, and a most-samples approach. DOE then performed reconciliation, through equal weighting of the results from the three approaches, to obtain a ''middle ground'' value of 0.32 in. wc. as the ESP representing a typical residence with a new space conditioning system.

DOE is aware that units used in certification laboratory testing have not aged and are thus not representative of seasoned systems in the field. Namely, dust, dander, and other airborne particulates, commonly deposited as foulant onto in-duct components in field installations, are unaccounted for in controlled testing environments. Foulant fills air gaps of the air filter and evaporator coil and restricts air volume rate, thus increasing ESP. This occurrence is not accounted for in certification testing environments. Therefore, DOE included an ESP adder for component foulant build-up to the test procedure to better reflect a representative average period of use. To determine the value of this adder, DOE examined the aforementioned field studies that captured the ESP contribution from vintage, and certainly fouled, air filters and evaporator coils. From the contributing studies, DOE estimates an average pressure drop due to the filter's foulant of 0.13 in. wc. based on the difference in static pressure contributions between fouled filters and clean filters. DOE also examined publicly available reference material and research to determine the pressure drop from the build-up of foulant on evaporator coils. Three resources in the public domain were identified that documented the impact of evaporator coil fouling on ESP in applications.[25] From this literature, DOE estimates an average pressure drop resulting from evaporator coil fouling of 0.07 in. wc. These additional pressure drops result in a total of 0.20 in. wc. being added to the revised ESP value, as mentioned. DOE seeks comment on its proposal to include in the ESP requirement a pressure drop contribution associated with average typical filter and indoor coil fouling levels and its use of residential-based indoor coil and filter fouling pressure drop data to estimate the appropriate ESP contribution. DOE also requests any data that would validate the proposed ESP contributions or suggestions of adjustments that should be made to improve representativeness of the values in this proposal. DOE notes that addition of these pressure drop contributions is consistent with the approach adopted for testing of furnace fans, which are tested without the filter and air conditioning coil, and for which the ESP selected for testing reflects the field fouling associated with these components.

Consistent with the current motivation in current certification procedures to promulgate policy that represents the majority of products in the field (10 CFR 429.16(a)(2)(ii)), DOE selected the capacity with the largest volume of retail sales, 3 tons, as the rated cooling capacity category to adopt

[24] Docket No. EERE–2010–BT–TP–0010–0043.

[25] Siegel, J., Walker, I., and Sherman, M. 2002. ''Dirty Air Conditioners: Energy Implications of Coil Fouling'' Lawrence Berkeley National Laboratory report, number LBNL–49757.

ACCA. 1995. Manual D: Duct Systems. Washington, DC, Air Conditioning Contractors of America.

Parker, D. S., J. R. Sherwin, et al. 1997. ''Impact of evaporator coil airflow in air conditioning systems'' ASHRAE Transactions 103(2): 395–405.

the minimum ESP requirement based on the field data and the adjustments. For the other cooling capacity categories, NEEA commented that ESP should not vary with capacity. (NEEA, No. 7 at p. 3). DOE considered the stakeholder comment and the higher ESPs indicative of larger homes, and proposes a compromise approach to use the current 0.05 in. wc. step variation among capacities.

In conclusion, DOE proposes to adopt, for inclusion into 10 CFR part 430, subpart B, Appendix M1, for systems other than multi-split systems and small-duct, high-velocity systems, minimum ESP requirements of 0.45 in. wc. for units with rated cooling capacity of 28,800 Btu/h or less; 0.50 in. wc. for units with rated cooling capacity of 29,000 Btu/h or more and 42,500 Btu/h or less; and 0.55 in. wc. for units with rated cooling capacity of 43,000 Btu/h or more. (DOE is not making such a revision in 10 CFR part 430, subpart B, Appendix M.) The proposed minimum ESP requirements are shown in Table III.8. DOE is aware that such changes will impact the certification ratings SEER, HSPF, and EER and is addressing such impact in the current energy conservation standards rulemaking.[26] DOE requests comment on these proposals.

TABLE III.8—PROPOSED MINIMUM ESP REQUIREMENTS FOR CENTRAL AIR CONDITIONERS AND HEAT PUMPS OTHER THAN MULTI-SPLIT SYSTEMS AND SMALL-DUCT, HIGH-VELOCITY SYSTEMS [27]

Rated cooling or heating capacity (Btu/h)	Minimum ESP (in. wc.)
Up Thru 28,800	0.45
29,000 to 42,500	0.50
43,000 and Above	0.55

2. Minimum External Static Pressure Adjustment for Blower Coil Systems Tested With Condensing Furnaces

As discussed in section III.H.1, DOE proposes to increase the minimum ESP required for testing blower coil central air conditioners and heat pumps. DOE notes that there are three different blower coil configurations: (1) An air handling unit which is a single piece of equipment containing a blower and a coil; (2) a coil paired with a separately-housed modular blower; (3) a coil paired with a separate furnace. The existing federal test procedure for central air conditioners and heat pumps does not require different minimum ESPs for these different blower coil configurations, even though the heat exchanger of a furnace may impose additional pressure drop on the air stream. The additional pressure drop can contribute to higher blower power, which may negatively affect the performance rating for a central air conditioner. Further, condensing furnaces, which have more heat transfer surface exposed to the flowing air than non-condensing furnaces, may impose even more pressure drop.

Given the potential disadvantage associated with the rating of an air conditioner with a condensing furnace as the designated air mover, DOE proposes an adjustment to the minimum external static pressure requirement for a rated blower coil combination using a condensing furnace as the air mover in order to mitigate the impact on air-conditioner ratings of furnace efficiency improvements. To aid the selection of representative ESP adjustments, DOE conducted laboratory testing for two condensing and three non-condensing furnaces to determine typical furnace heat exchanger pressure drop levels. DOE measured the pressure rise provided by each furnace when operating in the maximum airflow-control setting at a representative air volume rate, first as delivered and then with the furnace heat exchanger(s) removed. DOE measured average furnace heat exchanger pressure drop equal to 0.47 in. wc. for the condensing furnaces and 0.27 in. wc. for the non-condensing furnaces. The data suggest that condensing furnace pressure drop is roughly 0.2 in. wc. higher than non-condensing furnace pressure drop. However, DOE notes that cooling operation may be at lower air volume rates than the maximum cooling air volume rate used in the tests, since furnaces can be paired with air-conditioners having a range of capacities. Based on these results, DOE proposes to include in Appendix M1 of 10 CFR part 430 Subpart B a requirement of a downward adjustment of the required ESP equal to 0.1 in. wc. when testing an air conditioner in a blower-coil configuration (or single-package configuration) in which a condensing furnace is in the air flow path. DOE is not making such a revision in 10 CFR part 430, subpart B, Appendix M. DOE requests comments on this proposal.

3. Default Fan Power for Coil-Only Systems

The default fan power is used to represent fan power input when testing coil-only air conditioners, which do not include their own fans.[28] The default was discussed in the June 2010 NOPR, in which DOE did not propose to revise it due to uncertainty on whether higher default values better represent field installations. 75 FR 31227 (June 2, 2010). In response to the June 2010 NOPR, Earthjustice commented that the existing default fan power for coil-only units in the DOE test procedure is not supported by substantial evidence. ESPs measured from field data show significant higher values than the requirements in the existing test procedure. (Earthjustice, No. 15 at p. 2) However, to be consistent with the increase in ESP used for testing blower coil products, as discussed in section III.H.1, this notice proposes updating the default fan power (hereinafter referred to as ''the default value'') used for testing coil-only products. DOE used circulation blower electrical power data collected for the furnace fan rulemaking (79 FR 38129, July 3, 2014) to determine an appropriate default value for coil-only products.

DOE collected circulation blower consumption data from product literature, testing, and exchanges with manufacturers as part of the furnace fan rulemaking. These data are often provided in product literature in the form of tables listing air volume rate and circulation blower electrical power input across a range of ESP for each of the blower's airflow-control settings. DOE collected such data for over 100 furnace fans of non-weatherized gas furnace products for the furnace fan rulemaking. DOE used this database to calculate an appropriate default value to represent circulation blower electrical power for typical field operating conditions for air conditioning, consistent with the required ESP values proposed for blower coil split-systems. From the perspective of the furnace providing the air movement, the ESP is higher than that required for testing blower coil systems to account for the cooling coil and the air filter that would be installed for a coil-only test, since furnace airflow performance is determined without the coil and filter installed. DOE used pressure drop associated with the filter equal to 0.08 in. wc., consistent with the required ESP addition when testing without an air filter installed. In addition, DOE

[26] Docket No. EERE–2014–BT–STD–0048.

[27] DOE did not increase the ESP requirement for small-duct, high-velocity units because the existing values in the test procedure represent field operations.

[28] See 10 CFR 430 Subpart B Appendix M section 3.3.d.

estimates that the typical pressure drop associated with an indoor coil is 0.16 in. wc. DOE added the resulting sum, 0.24 in. wc., to the required ESP levels for testing a blower coil system to obtain the ESP levels it used to calculate the power input for furnaces in the furnace fan database.

The air volume rate at which central air conditioner and heat pumps are required to operate according to the DOE test procedure varies with capacity. Typically, units are tested and operated in the field while providing between 350 and 450 cfm per ton of cooling capacity. For the purpose of determining the appropriate default value, DOE investigated furnace fan performance at the ESP values discussed above while providing 400 cfm per ton of cooling capacity.

A product that incorporates a furnace fan can often be paired with one of multiple air conditioners of varying cooling capacities, depending on the installation. For example, a non-weatherized gas furnace model may be designed to be paired with either a 2, 3, or 4 ton coil-only indoor unit. These combinations are possible because the circulation blower in the furnace has multiple airflow-control settings. Multiple airflow-control settings allow the furnace to be configured to provide the target air volume rate for either 2, 3, or 4 ton coil-only indoor units by designating a different airflow-control setting for cooling. For furnaces with multiple such airflow-control settings that are suitable for air conditioning units, DOE calculated fan power for each of these settings since they all represent valid field operating conditions.

DOE then organized the results of the calculations by blower motor technology used and manufacturer, averaging over both to calculate an overall average default value. The distribution of motor technology follows projected distribution of motors used in furnaces in the field in the year 2021. By this time, there will be some small impact on this distribution associated with the furnace fan rule. DOE averaged by manufacturer based on market share.

The default fan power in the existing DOE test procedure does not vary among different capacities. DOE maintains the same approach for the adjusted default fan power. Using the aforementioned methodology, DOE calculated the adjusted default fan power to be 441 W/1000 cfm and proposes to use this value in Appendix M1 of 10 CFR part 430 Subpart B where Appendix M included a default fan power of 365 W/1000 cfm. DOE is not making such replacements in Appendix M of 10 CFR part 430 Subpart B.

4. Revised Heating Load Line

In the current test procedure, the heating seasonal performance factor (HSPF) determined for heat pumps in heating mode is calculated by evaluating the energy usage of both the heat pump unit (reverse refrigeration cycle) and the resistive heat component when matching the house heating load for the range of outdoor temperatures representing the heating season. The temperature range is split into 5-degree ''bins'', and an average temperature and total number of hours are assigned to each bin, based on weather data for each climate region used to represent the heating season—for the HSPF rating, this is Region IV. The amount of heating delivered at each temperature increases as the temperature decreases. This amount is dependent on the size of the house that the unit is heating. In addition, there is a relationship between the size of the house and the capacity of the heat pump selected to heat it. For the current test procedure, the heating load is proportional to the heating capacity of the heat pump when operating at 47 °F outdoor temperature. The heating load is also proportional to the difference between 65 °F and the outdoor temperature. The resulting relationship between heating load and outdoor temperature is called the heating load line—it slopes downward from low temperatures, dropping to zero at 65 °F. The slope of the heating load line affects HSPF both by dictating the heat pump capacity level used by two-capacity or variable-capacity heat pumps at a given outdoor temperature, and also by changing the amount of auxiliary electric resistance heat required when the unit's heat pumping capacity is lower than the heating load line. The current test procedure defines two load levels, called the minimum heating load line and maximum heating load line. However, it is the minimum heating load line in region IV that is used to determine HSPF for rating purposes.[29]

Studies have indicated that the current HSPF test and calculation procedure overestimates ratings because the current minimum heating load line is too low compared to real world situations.[30] In response to the November 2014 ECS RFI, NEEA and NPCC commented that the federal test procedure does a poor job representing balance point temperatures and electric heat energy use in the case of heat pump systems. They pointed out the inability of the test procedure to capture dynamic response to heating needs, such as use of electric resistance (strip) heat during morning or afternoon temperature setup (*i.e.,* rewarming of the space after a thermostat setback period). They also expressed concerns about capturing the use of electric resistance heat during defrost cycles and at times when it shouldn't be needed, such as when outdoor temperatures are above 30 °F. (NEEA & NPCC, No. 19 at p. 2)

DOE agrees with NEEA and NPCC and notes that the heating balance point determined for a typical heat pump using the current minimum heating load line in Region IV is near 17 °F, while the typical balance point is in the range 26 to 32 °F, resulting from installing a proper sized unit based on the design cooling load according to ACCA Manual S, 2014. The low heating balance point means that the test procedure calculation adds in much less auxiliary heat than would actually be needed in cooler temperatures, thus inflating the calculated HSPF. Furthermore, the zero load point of 65 °F ambient, which is higher than the typical 50–60 °F zero load point,[31] causes the test procedure calculation to include more hours of operation at warmer outdoor temperatures, for which heat pump operation requires less energy input, again inflating the calculated HSPF. These effects result in overestimation of rated HSPF up to 30% compared to field performance, according to a paper by the Florida Solar Energy Center (FSEC).[32] For these reasons, DOE reviewed the choice of heating load line for HSPF ratings and proposes to modify it.

[29] See 10 CFR 430 Subpart B Appendix M Section 1. Definitions.

[30] Erbs, D.G., C.E. Bullock, and R.J. Voorhis, 1986. ''New Testing and Rating Procedures for Seasonal Performance of Heat Pumps with Variable-Speed Compressors'', ASHRAE Transactions, Volume 92, Part 2B.

Francisco, Paul W., Larry Palmiter, and David Baylon, 2004. ''Understanding Heating Seasonal Performance Factors for Heat Pumps'', 2004 Proceedings of the ACEEE Summer Study on Energy Efficiency in Buildings.

Fairey, Philip, Danny S. Parker, Bruce Wilcox, and Matthew Lombardi, 2004. ''Climatic Impacts on Seasonal Heating Performance Factor (HSPF) and Seasonal Energy Efficiency Ratio (SEER) for Air-Source Heat Pumps'', ASHRAE Transactions, Volume 110, Part 2.

[31] Francisco, Paul W., Larry Palmiter, and David Baylon, 2004. ''Understanding Heating Seasonal Performance Factors for Heat Pumps'', 2004 Proceedings of the ACEEE Summer Study on Energy Efficiency in Buildings.

[32] Fairey, Philip, Danny S. Parker, Bruce Wilcox, and Matthew Lombardi, 2004. ''Climatic Impacts on Seasonal Heating Performance Factor (HSPF) and Seasonal Energy Efficiency Ratio (SEER) for Air-Source Heat Pumps'', ASHRAE Transactions, Volume 110, Part 2.

As part of this review, ORNL conducted building load analysis using the EnergyPlus simulation tool on a prototype residential house based on the 2006 IECC code and summarized the study in a report to DOE.[33] In general, the studies indicate that a heating load level closer to the maximum load line and with a lower zero load ambient temperature is more representative than the minimum load line presently used for HSPF rating values.

Based on the results from the ORNL studies, DOE proposes the new heating load line equation to be used for calculation of HSPF as:

$$BL(T_j) = \frac{(T_{zl} - T_j)}{T_{zl} - T_{OD}} \cdot DHR$$

Where

T_j = the outdoor bin temperature, °F
T_{OD} = the outdoor design temperature, °F
DHR = the design heating requirement, Btu/h
T_{zl} = the zero load temperature, °F

The proposed equation includes the following changes from the current heating load line used for calculation of HSPF: [34]

- The equation form does not differ by region;
- The zero load temperature varies by climate region, as shown in Table III.6, and for Region IV is at 55 °F, which is closer to what occurs in the field;
- The design heating requirement is a function of the adjustment factor, or the slope of the heating load line, and is 1.3 rather than 0.77; and
- The heating load is tied with the nominal heat pump cooling capacity used for unit sizing rather than the heating capacity (except for heating-only heat pumps).

Revised heating load hours were determined for the new zero load temperatures of each climate region. The revised heating load hours are given below in Table III.9.

TABLE III.9—GENERALIZED CLIMATIC REGIONAL INFORMATION

Region No.	I	II	III	IV	V	VI
Heating Load Hours	562	909	1,363	1,701	2,202	* 1,974
Zero Load Temperature, T_{ZL}	60	58	57	55	55	58

* Pacific Coast Region.

The proposed heating load line simulates the actual building load in different climate regions, so the maximum and minimum heating load lines of the current test procedure are not needed. The ORNL building simulation results show that the same equation matching the building load applies well to all regions. DOE therefore proposes eliminating maximum and minimum DHR definitions.

DOE believes that it is more appropriate to base the heating load line on nominal cooling capacity rather than nominal heating capacity, because heat pumps are generally sized based on a residence's cooling load. For the special case of heating-only heat pumps, which clearly would be sized based on heating capacity rather than cooling capacity, DOE proposes that the nominal heating capacity at 47 °F would replace the cooling capacity in the proposed load line equation. This is consistent with the building heating load analysis.

The proposed altered heating load line would alter the measurement of HSPF. DOE estimates that HSPF would be reduced on average about 16 percent for single speed heat pumps and two capacity heat pumps. The impact on the measurement for variable-speed heat pumps is discussed in section III.H.5. Consistent with the requirements of 42 U.S.C. 6293(e), DOE will account for these changes in any proposed energy conservation standard, and this test procedure proposal would not become effective until the compliance date of any new energy conservation standard.

In response to the November 2014 ECS RFI, University of Alabama commented that the current test procedure for central air conditioners and heat pumps include cooling bin data at 67 °F and heating bin data at 62 °F. This results in a dead band of 5 °F. Because the current test procedure prescribes the indoor temperature set point to be 70 °F for heating, and 80 °F for cooling, the temperature difference of 10 °F is inconsistent with the dead band of 5 °F from the temperature bin. University of Alabama also suggested adopting 62 °F and 52 °F as the zero load points for cooling and heating modes, respectively. (University of Alabama, No. 6 at p. 1–2)

The indoor dry bulb set temperature of 70 °F for heating and 80 °F for cooling represent field set temperature for central air conditioners and heat pumps in a typical residential household. These two temperatures are also used in other product or equipment classes such as the commercial unitary air conditioners and heat pumps.[35]

In this notice, DOE proposes to revise the heating load line which shifts the heating balance point and zero load point to lower ambient temperatures. These amendments reflect more representative unit field operations and energy use characteristics. The revised heating load line lowers the zero load point for heating in region IV to 55 °F. Given the cooling-mode zero load point of 65 °F, the proposed change would increase the temperature difference between the heating and cooling zero load points to 10 °F, which equals the temperature difference between cooling and heating modes thermostat set points. The proposal would hence make these values more consistent with each other, whether or not this consistency is necessary for accuracy of the test procedure.

As a result of this proposed heating load line change, DOE also proposes that cyclic testing for variable speed heat pumps be run at 47 °F instead of 62 °F, as required by the current test procedure (see Appendix M, section 3.6.4 Table 11). The test would still be

[33] ORNL, Rice, C. Keith, Bo Shen, and Som S. Shrestha, 2015. *An Analysis of Representative Heating Load Lines for Residential HSPF Ratings,* ORNL/TM–2015/281, July. (Docket No. EERE–2009–BT–TP–0004–0046).

[34] Most commonly used heating load equation based on minimum design heating requirement and region IV: $Q_h(47) * 0.77*(65–Tj)/60$.

[35] See ANSI/AHRI Standard 340/360–2007 with Addenda 1 and 2, Performance rating of commercial and industry unitary air-conditioning and heat pump equipment.

conducted using minimum compressor speed. With the modified heating load line there would be no heat pump operation at 62 °F, so cyclic testing at 47 °F would be more appropriate. DOE seeks comment on this proposal.

DOE proposes to make the changes to the test procedure as mentioned in this subsection only in Appendix M1 of 10 CFR part 430 Subpart B, and is not making such changes to Appendix M of the same Part and Subpart.

5. Revised Heating Mode Test Procedure for Products Equipped With Variable-Speed Compressors

A recent Bonneville Power Administration (BPA) commissioned study done by Ecotope, Inc., and an Oak Ridge National Lab (ORNL)/Tennessee Valley Authority (TVA) field test found the heating performance of a variable speed heat pump, based on field data, is much lower than the rated HSPF.[36] Therefore, DOE revisited the heating season ratings procedure for variable speed heat pumps, is are found in section 4.2.4 of Appendix M of 10 CFR part 430 Subpart B.

The HSPF is calculated by evaluating the energy usage of both the heat pump unit (reverse refrigeration cycle) and the resistive heat component when matching the dwelling heating load at each outdoor bin temperature. Currently, both the minimum and the maximum capacities are calculated at each outdoor bin temperature to determine whether the variable speed heat pump capacity can or cannot meet the building heating load. At an outdoor bin temperature where the heat pump minimum capacity is higher than the building heating load, the heat pump cycles at minimum speed. The energy usage at such outdoor bin temperature is determined by the energy usage of the heat pump at minimum speed and the unit cyclic loss. At an outdoor bin temperature where the heat pump maximum capacity is lower than the building heating load, the heat pump operates at maximum speed. The energy usage at such outdoor bin temperature is determined by the energy usage of the heat pump at maximum speed and of the additional resistive heat required to meet the building load.

In the current test procedure, the capacity and the corresponding energy usage at minimum speeds are determined by the two minimum speed tests at 47 °F and 62 °F (outdoor temperature[37]), assuming the capacity and energy usage is linear to the outdoor temperature and the compressor speed does not change with the outdoor temperature. The capacity and the corresponding energy usage at maximum speeds are determined by the two maximum speed tests at 47 °F and at 17 °F, assuming the compressor speed does not change with the outdoor temperature. Both the minimum and the maximum capacities and energy usages are also used to estimate the heat pump operating capacity and energy usage when the heat pump operates at an intermediate speed to match the building heating load.

In reviewing these calculations, DOE compared the efficiencies (capacity divided by energy usage; at maximum speed, intermediate speed, and minimum speed at ambient temperatures representing the heating season) calculated using the method in current test procedure to the efficiencies tested in the lab at each of the 5 °F bin temperatures representing the heating season, and found two discrepancies where the efficiencies are not predicted accurately by the test procedure.

The first discrepancy occurs only for the variable speed heat pump that prevents minimum speed operation at outdoor temperatures below 47 °F. In the mid-range outdoor temperature range (17–47 °F), the efficiencies are over-predicted. The cause of this over-prediction is that the unit's actual minimum capacity is higher than the calculated minimum capacity in the range of outdoor temperature 17–47 °F. The calculated minimum capacity is based on the assumption that the unit can operate at the minimum speed in this range, which is not true with such units.

DOE considered two alternative methods to provide more accurate efficiency predictions for mid-range outdoor temperatures. In the first method, the minimum capacity and the corresponding energy usage for outdoor temperatures lower than 47 °F would be determined by the minimum speed tests at 47 °F and the intermediate speed test at 35 °F, which are both required test points in current test procedure. The new calculation method results in the capacity and energy usage more representative of the unit operation performance in the temperature region 35–47 °F. The HSPF calculated with this option agrees with the tested HSPF within 6%. This option does not require additional testing beyond what is required in the current test procedure.

In the second method, the minimum capacity and the corresponding energy usage for outdoor temperature lower than 47 °F would be determined by minimum speed tests at 47 °F and at 35 °F, where the test point of minimum speed at 35 °F is an additional test point that is not required in the current test procedure. In addition, the intermediate capacity and the corresponding energy usage would be modified for more accurate efficiency prediction at the outdoor temperature range 17–35 °F. This is done by defining the medium speed test as the average of the maximum and minimum speed and using the medium speed test at 17 °F and the intermediate speed test at 35 °F to determine the intermediate capacity and the corresponding energy usage, where the test at the medium speed at 17 °F is a test point not required in the current test procedure. With this method, the unit's calculated performance is well matched with the unit's actual operation in the outdoor temperature region 17–35 °F. The HSPF calculated with this option aligns with the tested HSPF within 2%. However, this option requires two additional test points, medium speed at 17 °F and minimum speed at 35 °F, which adds test burden for manufacturers.

After considering these two alternative methods with regard to the current test procedure, DOE further evaluated the impact of the proposed heating load line change (see section III.H.4) on the variable speed HSPF rating. DOE found that efficiencies calculated with the modified heating load line and with the current variable speed heat pump rating method match rather closely with those calculated from a more detailed set of test data at each outdoor bin temperature. The calculated HSPFs agree within 1 percent. Use of the proposed load line greatly reduces the error in the test procedure calculation from the speed limiting controls at ambient temperatures below 47 °F. The net effect is that the ratings calculation approach using the proposed load line with the current test points gives results close to those with more detailed data sets. However, because this also removes an artificial HSPF benefit that such units were obtaining, the net reduction in rated HSPF for such units could be as much as 26%.[38] DOE believes that this indicates that the modified heating load

[36] Larson, Ben, Bob Davis, Jeffrey Uslan, and Lucinda Gilman, 2013. *Variable Capacity Heat Pump Field Study, Final Report,* Ecotope, Inc., Bonneville Power Administration, August.

Munk, J.D., Halford, C., and Jackson, R.K., 2013. *Component and System Level Research of Variable Capacity Heat Pumps,* ORNL/TM–2013/36, August.

[37] All temperatures in section III.H.5, if not noted otherwise, mean outdoor temperature.

[38] Rice *et al.* (2015) Review of Test Procedure for Determining HSPFs of Residential Variable-Speed Heat pumps. (Docket No. EERE–2009–BT–TP–0004–0047).

line is sufficient to address the HSPF over-prediction issue for the variable speed heat pumps. Therefore, at this time, DOE does not propose changes specifically to the variable speed test points or heating calculations in the proposed Appendix M1. However, DOE notes that should stakeholder comments on this notice provide sufficient justification to retract the proposal to adopt the proposed modified heating load line, DOE would instead adopt, as part of Appendix M1, modifications to the variable speed heating calculations for units that prevent minimum speed operation. DOE requests comment on whether, in the case that the proposed heating load line is not adopted, DOE should modify the HSPF rating procedure for variable speed heat pumps using option 1, which is less accurate but has no additional test burden, or option 2, which is more accurate but with higher test burden.

The second potential discrepancy between the efficiencies (capacity divided by energy usage) calculated using the method in the current test procedure with the efficiencies tested in the lab at each outdoor bin temperature occurs at temperatures lower than 17 °F, where the test procedure assumes the heat pump operates at the maximum speed. The capacity and the corresponding energy usage at maximum speed at different outdoor bin temperatures are determined by the two maximum speed tests at 47 °F and at 17 °F, assuming the compressor speed does not change with the outdoor temperature. However, DOE found that some variable speed heat pumps do not allow maximum speed operation when the outdoor temperature is below 17 °F. For such units, the assumption in the current test procedure is not appropriate. The impact of this discrepancy on the HSPF is not significantly changed by the proposed heating load line revision.

DOE proposes as part of Appendix M1 that for the variable speed units that limit the maximum speed operation below 17 °F and have a low cutoff temperature less than 12 °F, the manufacturer could choose to calculate the maximum heating capacity and the corresponding energy usage through two maximum speed tests at: (1) 17 °F outdoor temperature, and (2) 2 °F outdoor temperature or at a low cutoff temperature, whichever is higher.[39] With this proposed change, manufacturers could choose to conduct one additional steady state test, at maximum compressor speed and at a low temperature of 2 °F or at a low cutoff temperature, whichever is higher.

The testing done by ORNL found that the unit efficiency at maximum speed below 17 °F is slightly higher than the extrapolated values in the current test procedure, and this proposed option would provide a more accurate prediction of heat pump low ambient performance not only for those units that limit maximum speed operation below 17 °F, but also for those that do not.[40] DOE therefore proposes to revise Appendix M1 such that, for variable speed units that do not limit maximum speed operation below 17 °F, manufacturers would also have the option to use this revised method if it is more representative of low ambient performance.

DOE believes that the proposed revision reflects field energy use more accurately. However, DOE acknowledges that the limited test results available show very small improvements in the accuracy of the rating method. Because the proposed revision adds an additional test burden (one new test), DOE has proposed to make it optional rather than mandatory. However, DOE would consider making this proposal mandatory for some or all variable speed units, given additional information. Specifically, DOE requests test results and other data that demonstrate whether HSPF results for other variable speed heat pumps would be more significantly impacted by this proposed option, as well as whether the additional test burden would offset the advantages of the proposed modification.

DOE notes that the proposed revision also adds additional complexity to the test procedure in terms of which combinations of tests need to be conducted. In the current test procedure, to calculate the maximum speed performance in the temperature range 17–45 °F, the maximum speed performance at 35 °F is required. However, the maximum speed 35 °F test is not required and performance at 35 °F may instead be calculated from the two maximum speed tests at 17 °F and 47 °F. Therefore, even though manufacturers who choose to rate with the optional low ambient point would no longer need the maximum speed 47 °F point to calculate energy use at maximum speed below 17 °F, they would need either the maximum speed 47 °F test point or 35 °F test point to calculate the capacity and energy use at maximum speed at 35 °F. They may also wish to conduct the maximum speed 47 °F test point to rate heating capacity, although in the proposed Appendix M1, this is only required for heating-only heat pumps.

In summary, with the proposed option for calculating maximum speed performance below 17 °F, manufacturers would test at both maximum speed at 2 °F (or low cutoff temperature) and maximum speed at 17 °F. For rating at 35 °F, they would also test at either maximum speed at 35 °F or maximum speed at 47 °F. Finally, to rate heating capacity or nominal heating capacity (for units whose controls do not allow maximum speed operation at 47 °F), they may also choose to test at either maximum speed at 47 °F allowed by their standard controls or cooling capacity maximum speed at 47 °F, respectively. Table III.10 lists the maximum speed test combination options for the variable speed heat pumps. The test combination option 1 is the default in current test procedure.

TABLE III.10—PROPOSED MAXIMUM SPEED HEATING TEST COMBINATION OPTIONS FOR UNITS HAVING A VARIABLE-SPEED COMPRESSOR

Test description (outdoor dry bulb temperatures)	Current test procedure (Option 1)	Option 2	Option 3	Option 4	Option 5
$H1_N$ (2 °F)	optional if using nominal heating capacity.			for nominal heating capacity.	for nominal heating capacity.
$H1_2$ (47 °F)	X	X	for heating capacity only.		X.
$H2_2$ (35 °F)			X	X	
$H3_2$ (17 °F)	X	X	X	X	X.

[39] In the case that the low cutoff temperature is higher than 12 °F, the manufacturer would not be allowed to utilize this option for calculation of the maximum heating load capacity.

[40] EERE–2009–BT–TP–0004–0047.

TABLE III.10—PROPOSED MAXIMUM SPEED HEATING TEST COMBINATION OPTIONS FOR UNITS HAVING A VARIABLE-SPEED COMPRESSOR—Continued

Test description (outdoor dry bulb temperatures)	Current test procedure (Option 1)	Option 2	Option 3	Option 4	Option 5
$H4_2$ (2 °F) *		X	X	X	X.

* Or low cutoff temperature, whichever is higher.
Note: For units with a low cutoff temperature higher than 12 °F, options 2 through 5 are not available.

DOE additionally notes that all proposed changes in this subsection would change the efficiency ratings of units and are therefore proposed as part of Appendix M1 of 10 CFR 430 Subpart B. Such proposed changes would not appear in Appendix M of the same Part and Subpart.

I. Identified Test Procedure Issues DOE may Consider in Future Rulemakings

Various comments from stakeholders during the public comment period following the publication of the November 2014 ECS RFI raised additional test procedure issues. The stakeholders requested that DOE consider these issues when amending its test procedures. After careful consideration of these issues, DOE believes that either they cannot be resolved or that they require additional action at this time, and therefore declines to address them in this SNOPR. Discussion of these test procedure issues follows in the subsequent subsections.

1. Controlling Variable Capacity Units to Field Conditions

Central air conditioners and heat pumps can be divided into single-speed, two-capacity, or variable capacity (or speed) units based on capacity modulation. System controls are typically more complex with the increasing modulating capability. The DOE test procedure prescribes different testing requirements for units depending on whether they are single-speed, two-capacity, or variable capacity (or speed) in order to characterize the efficiency ratings accurately.

In response to the RFI, stakeholders submitted several comments that address the more complex operation of variable capacity central air conditioners and heat pumps. Stakeholders also submitted comments highlighting the need for improvement in the test procedure's ability to accurately predict energy use in the field, even for units that do not have variable capacity capability. PG&E urged DOE to revise the current test procedure to reflect the more nuanced operation of modern variable speed central air conditioners and heat pumps over the full range of outdoor conditions, given that variable speed units operate differently from the traditional single-speed or two-capacity units. (PG&E, No. 15 at p. 2)

Edison Electric Institute commented that the current test procedure for central air conditions and heat pumps need to be updated to avoid ''gaming'' of system controls to maximize rated SEER and EER, as there is an increase in using variable speed controls for motors, compressors, and variable refrigerant flow. (EEI, No. 18 at p. 3)

NEEA & NPCC commented that the current test procedure does not appropriately test the operation of variable capacity systems. These systems operate much differently in the field than the forced operating conditions with which they are currently tested under waivers and artificially created laboratory conditions. As a result, the efficiency ratings and estimated energy use of these systems cannot be reliably determined. NEEA & NPCC also claimed that the field data shows that systems from different manufacturers with identical HSPF and SEER ratings and identical rated capacity will use significantly different amounts of energy under identical environmental conditions. (NEEA & NPCC, No. 19 at p. 2) NEEA & NPCC also showed the field energy use profiles for six units. They further commented that variable capacity systems behave in a nearly infinite variety of ways under similar outdoor and indoor temperature conditions, and much of this behavior occurs outside the bounds of the test procedure conditions. (NEEA & NPCC, No. 19 at p. 4) NEEA and NPCC commented that test procedure updates to variable capacity equipment will have an impact on the energy savings of these systems. They also commented that the test procedure more accurately representing the field energy use for heat pump systems could vary significantly by climate zone. (NEEA & NPCC, No. 19 at p. 10)

ASAP, ASE, and NRDC commented that the current method for testing variable-capacity units used by manufacturers who have obtained test procedure waivers may not provide good representation of energy use in the field or reasonable relative rankings of product. Representative ratings of variable-capacity products will become more important in the future as variable-capacity units become more widely adopted. (ASAP & ASE & NRDC, No. 20 at p. 1)

PG&E commented that central air conditioners and heat pumps should be tested at part load and cyclic testing under conditions that represent field operations. (PG&E, No. 15 at p. 3) However, PG&E did not provide further detail on what part load and cyclic conditions would be field representative.

ACEEE commented that the current federal test procedure has been awkward for rating new technologies, notably ductless equipment, and probably some types of modulating equipment. (ACEEE, No. 21 at p. 2)

As discussed in section III.H.5, DOE proposes to amend the testing requirements for units equipped with a variable speed compressor during heating mode operation. These proposed amendments would improve the field representativeness of variable speed units and better characterize the field energy use. However, DOE acknowledges that further improvements as suggested by the stakeholders could be possible if more detailed field testing data is available. DOE may consider in a future rulemaking additional amendments to improve the test procedure's representation of field energy use. In regards to ductless and modulating equipment, DOE's existing test procedure already covers testing and rating of these technologies.

2. Revised Ambient Test Conditions

Central air conditioners and heat pumps operate in a wide range of weather conditions throughout the year. Further, both the range of temperature and humidity conditions associated with most of these products' energy use also varies from one climate region to another. The test procedure prescribes calculation of seasonal energy efficiency metrics for cooling and heating based on a finite set of test conditions intended to represent the range of operating conditions while avoiding excess test burden.

DOE decided in the June 2010 NOPR not to propose modifications to convert to wet-coil cyclic testing as data and information were not available to quantify subsequent impacts. 75 FR 31223, 31228 (June 2, 2010). In response to the June 2010 NOPR, SCE, SCGC and SDGE submitted a joint comment recommending DOE require that manufacturers disclose performance data at a range of test conditions, as specified in the Consensus Agreement. The joint comment further explained that program designers need to know how equipment performs in a range of conditions in order for rebate and incentive programs to be effective. This could also make it possible for consumers to select products with performance characteristics that meet their needs. (Docket EERE–2009–BT–TP–0004, SCE, SCGC, and SDGE, No. 9, at p.3)

In the current AHRI certified directory,[41] manufacturers report the full load capacity and EER in addition to SEER for central air conditioners. Manufacturers also report heating capacities and EERs at both 47 °F and 17 °F ambient test conditions in addition to the seasonal efficiency metric HSPF for heat pumps. Cooling capacity and EER at full load are also reported in addition to SEER for heat pumps. DOE believes that this rating data provides sufficient information for determining rebate and incentive programs for program designers.

NREL commented that the existing DOE testing and certification requirements for central air conditioners and heat pumps do not provide sufficient data to compare different units. NREL also urged DOE to adopt different testing conditions for the hot dry and hot humid region. NREL further commented that measurement of water condensation must be reported with higher fidelity than the sensible heat ratio. Latent loads and moisture removal should be reported in each test condition. (EERE–2009–BT–TP–0004, NREL, No. 14 at p. 1)

DOE does not intend to establish different test conditions for various regions of this country. DOE believes that it would add significant burden to manufacturers to report the latent loads and moisture removal in each test condition. In this SNOPR, DOE revises the certification requirement to include reporting the sensible heat ratio. See section III.I.5 for more details. DOE believes that the sensible heat ratio provides a good indication of the moisture removal capability for central air conditioners and heat pumps.

Stakeholders submitted a number of comments on the revised ambient test condition in response to the RFI published on November 5, 2014. 79 FR 65603. University of Alabama commented that the testing conditions prescribed in the federal test procedure for central air conditioners and heat pumps are not representative of actual operation in the field. The outdoor temperatures used for rating should be expanded from 2 to 3 for constant speed units and from 5 to 6 for multi-capacity and variable speed units. The rating points can be used to determine more appropriate SEER and HSPF for climates outside of the current DOE zone 4 conditions. Specifically, University of Alabama proposed the cooling indoor dry bulb and wet bulb temperatures to be 77 °F and 64.4 °F, instead of the current requirement of 80 °F and 67 °F, respectively. Heating indoor dry bulb temperature should use 68 °F instead of the current requirement of 70 °F. For the outdoor conditions, testing at 113 °F, 95 °F, and 77 °F have been proposed for the cooling mode, and 41 °F, 23 °F, and 5 °F have been proposed for the heating mode, respectively. (University of Alabama, No. 6 at p. 1–2)

PG&E commented that DOE should amend the test procedure to require testing at 76 °F dry bulb with 50% relative humidity indoor conditions to represent the comfort desired in dwellings. (PG&E, No. 15 at p. 3) However, PG&E did not provide further detail on why the revised test condition is more representative than the requirements in the current federal test procedure.

PG&E also commented that the current cooling condition at 95 °F does not fully capture the peak load experienced by consumers in the hottest summer weather. PG&E further urged DOE to revise the test procedure to account for ambient dry bulb conditions of 105 °F or 115 °F experienced by consumers in the desert climates. (PG&E, No. 15 at p. 3)

Moreover, PG&E commented that DOE should adopt the testing at outdoor ambient temperatures that generate a performance map of the system for use in annual energy use simulation. (PG&E, No. 15 at p. 3) However, there is no further detail provided regarding this comment.

EEI suggested that DOE revise the indoor air inlet dry bulb/wet bulb temperatures to be lowered from 80 °F/67 °F to 78 °F/61 °F, respectively. Such a change would create more realistic indoor conditions that would require dehumidification to ensure properly managed indoor air quality. (EEI, No. 18 at p. 4) However, EEI did not provide further detailed justifications why such a change would create more realistic indoor conditions than the current federal testing requirements.

NEEA and NPCC commented that the current federal test procedure does not capture performance under the full range of operating conditions for which many of these systems are designed. Some air conditioners perform significantly better at temperatures above 100 °F than others, but based on the current test procedure, there is no testing requirement for temperatures above 95 °F. For heat pumps, systems may perform differently above 47 °F and below 17 °F conditions. NEEA and NPCC commented that the test procedure and the resulting ratings should expose these differences and allow the market to properly select the systems that are most appropriate and most efficient for individual climate conditions. (NEEA & NPCC, No. 19 at p. 2)

ASAP, ASE, and NRDC commented that the test conditions defined in the current test procedure do not reflect field conditions. Adding a test point for SEER ratings at an outdoor temperature above 95 °F and adding a test point for HSPF ratings at an outdoor temperature below 17 °F would incentivize manufacturers to provide good efficiency performance at these temperatures. In addition, requiring reporting of performance at each of the outdoor temperature test points would allow efficiency program administrators to incentivize equipment that will perform well in their region. (ASAP & ASE & NRDC, No. 20 at p. 2)

DOE appreciates that there may be value in providing more performance data, and that the range of operating conditions in the field may be more extensive than that represented by the current test. However, the extensive study and test work that would have to be conducted to properly assess and choose a better range of test conditions has not been completed. Hence, although DOE has proposed some changes to the test conditions required for testing of variable-speed heat pumps in heating mode, DOE has not proposed changes as extensive as the comments suggest. DOE may consider additional changes addressing these issues in future test procedure rulemakings.

[41] *http://www.ahridirectory.org/ahridirectory/pages/home.aspx.*

3. Performance Reporting at Certain Air Volume Flow Rates

Central air conditioners and heat pumps condition the indoor air to satisfy cooling and heating requirements of a house. For ducted central air conditioners and heat pumps, indoor air is driven by the blower of the air handling unit or the furnace. Air volume rate affects the heat transferred between the air conditioning device and indoor air, and also affects the performance ratings of an air conditioner or heat pump.

University of Alabama recommended that all performance results for central air conditioners and heat pumps be reported within the air volume rate range of 375 to 425 cfm per ton, and that the air volume rates be included in the reporting requirements. Higher air volume rates will result in reduced dehumidification capability and cause thermal comfort issue. (University of Alabama, No. 9 at p. 1)

The current DOE test procedure requires that full load air volume rate be no more than 37.5 standard cfm (scfm) per 1,000 Btu/h of cooling capacity (see 10 CFR part 430, subpart B, Appendix M, Section 3.1.4.1.1), but the test procedure does not have a minimum air volume rate requirement. DOE has proposed in this notice to require reporting of the cooling full load air volume rate as part of certification reporting. See section III.I.5 for more details. The air volume rate is also reported in the AHRI certification database.[42] DOE believes that these requirements will ensure that air volume rates used for rating central air conditioners and heat pumps are in an appropriate range.

4. Cyclic Test With a Wet Coil

The DOE test procedure for central air conditioners and heat pumps prescribe specific test conditions under which units are to be tested. These test conditions include both steady-state and cyclic tests. A dry coil test refers to the test conditions that do not result in moisture condensing on the indoor coil, and a wet coil test refers to the test conditions that result in moisture condensing on the indoor coil. DOE proposed in the June 2010 NOPR not to amend the existing cyclic testing requirement from dry coil test to wet coil test. DOE concluded that there was no sufficient data to show a greater benefit to using wet coil cyclic test versus the dry coil cyclic test. 75 FR 31223, 31227 (June 2, 2010).

In response to the RFI regarding central air conditioners and heat pumps (79 FR 65603, November 5, 2014), ASAP & ASE & NRDC commented that the cyclic test in the current test procedure is conducted using a dry coil, which is not representative of field conditions. Using the same indoor conditions (*i.e.,* 80 °F dry bulb and 67 °F wet bulb) for the cyclic tests as used for the steady-state test would better reflect the cyclic performance of central air conditioners and heat pumps. (ASAP & ASE & NRDC, No. 20 at p. 2) DOE believes this approach may have merit, but has not sufficiently studied it to have proposed its inclusion in the test procedure at this time. DOE may consider adopting the approach in a future rulemaking.

5. Inclusion of the Calculation for Sensible Heating Ratio

Air conditioning reduces air temperature and also reduces humidity. Cooling associated with air temperature reduction is called sensible capacity, while cooling associated with dehumidification is called latent capacity. The balance of these capacities for a given air conditioner operating in a given set of operating conditions is represented as sensible heat ratio (SHR), which is equal to sensible cooling divided by total cooling. Air conditioners can be designed to operate with high or low SHR depending on the air conditioning needs. Similarly, an air conditioner can be optimized to maximize efficiency depending on the indoor humidity level.

In the June 2010 NOPR, DOE proposed including the calculation for (SHR at the B, B_1, or B_2 test condition (82 °F dry bulb, 65 °F wet bulb, outside air) in the test procedure. 75 FR 31223, 31229 (June 2, 2010). DOE received comments regarding the inclusion of calculations for SHR in the subsequent public comment period. AHRI supported adoption of the SHR, provided that it is based off the total net capacity and is a reported value only. (AHRI, No. 6 at p. 4) Ingersoll Rand agreed with AHRI. (Ingersoll Rand, No. 10 at pp. 2–3) Lennox likewise agreed with AHRI regarding adding calculations for SHR and further requested that DOE provide calculations for SHR at outdoor ambient conditions of 82 °F. (Lennox, No. 11 at p. 1) Building Science Corporation stated that the calculation of the SHR was a favorable step towards inclusion of a dehumidification performance rating, but requested determining SHR at multiple outdoor and indoor conditions and reporting a metric for moisture removal efficacy. (Building Science Corporation, No. 16 at p. 1) NEEA concurred with DOE's proposal in the NOPR to add calculations of sensible heat ratio (SHR) to the test procedure requirements. (NEEA, No. 7 at p. 6) The People's Republic of China World Trade Organization Technical Barriers to Trade National Notification and Enquiry Center (China WTO) suggested that SHR be calculated at the same SEER test conditions. (China WTO, No. 18 at p. 4).

DOE does not believe that measurements at multiple indoor or outdoor conditions are necessary to obtain a SHR value that represents unit operation during an average use cycle or period. (42 U.S.C. 6293(b)(3)) Therefore, DOE is maintaining its position in the NOPR to include calculation for sensible heat ratio at only the condition at which products are rated (82 °F dry bulb, 65 °F wet bulb, outside air), and proposes to include this change to the revised Appendix M test procedure in this notice. DOE notes that the addition of these calculations does not add significant test burden because the existing measurement instruments, used for determining the inputs for SEER, can also determine the inputs for SHR.

The June 2010 NOPR highlighted a Joint Utilities recommendation that DOE should require all units be certified and rated for sensible heat ratio (SHR) at 82 °F ambient dry bulb temperature. 75 FR 31223, 31229 (June 2, 2010). DOE believes that the existing certification test procedures and ratings are sufficient to determine product efficiency; efforts to establish dehumidification performance for central air conditioner and heat pumps are not currently necessary given that the primary function of the subject products is not dehumidification, nor would doing so be helpful in improving the accuracy of product efficiency.

In response to the RFI regarding central air conditioners and heat pumps (79 FR 65603, November 5, 2014), stakeholders submitted several comments on the reporting requirements related to the SHR. PG&E commented that the test procedure should adopt testing that characterizes the sensible heat ratios for high (western dry climates, approximately 500 cfm/ton) and low (eastern humid climates, approximately 350 cfm/ton) evaporator coil air volume rate. (Docket No. EERE–2014–BT–STD–0048, PG&E, No. 15 at p. 3) Edison Electric Institute commented that the test procedure should take into account a dehumidification requirement as homes are getting tighter with fewer air changes. (*Id.;* EEI, No. 18 at p. 3) ASAP & ASE & NRDC requested DOE require reporting sensible heat ratio for central air conditioners and heat pumps. Sensible heat ratio would provide more

[42] AHRI Directory of Certified Product Performance: *https://www.ahridirectory.org/ahridirectory/pages/home.aspx.*

information to consumers and contractors about appropriate units for their region and also allow efficiency program administrators to better target efficiency programs for central air conditioners and heat pumps. (*Id.;* ASAP & ASE & NRDC, No. 20 at p. 2)

In response to the stakeholder comments, DOE understands that air volume rate can be controlled properly to suit the dehumidification purposes. However, manufacturers can design their products to meet the needs of consumers in different climate regions. Therefore, DOE does not intend at this time to develop a test procedure that requires different air volume rates based on the climate region. DOE does, however, realize the merit of reporting SHR for consumer choices. As such, DOE proposes to simply require the reporting of the SHR value calculated based on full-load cooling test conditions at the outdoor ambient conditions proposed earlier in this section: 82 °F dry bulb and 65 °F wet bulb.

J. Compliance With Other Energy Policy and Conservation Act Requirements

1. Test Burden

EPCA requires that any test procedures prescribed or amended shall be reasonably designed to produce test results which measure energy efficiency, energy use, or estimated annual operating cost of a covered product during a representative average use cycle or period of use, and shall not be unduly burdensome to conduct. (42 U.S.C. 6293(b)(3)) For the reasons that follow, DOE has tentatively concluded that revising the DOE test procedure, per the proposals in this SNOPR, to measure the energy consumption of central air conditioners and heat pumps in active mode and off mode would produce the required test results and would not result in any undue burdens.

As discussed in section IV.B of this SNOPR, the proposed test procedures to determine the active-mode and standby-mode energy use would require use of the same testing equipment and facilities that manufacturers are currently using for testing to determine CAC and CHP ratings for certifying performance to DOE. While this notice proposes clarifications to the test procedures, and proposes adopting into regulation the test procedures associated with a number of test procedure waivers, most of the proposals would not affect test time or the equipment and facilities required to conduct testing. Possible changes in test burden associated with the proposals of this notice apply to off mode testing and requirements for testing of basic models by ICMs.

The proposals include additional testing to determine off mode energy use, as required by EPCA. (42 U.S.C. 6295(gg)(2)(A)) This additional testing may require investment in additional temperature-controlled facilities. However, DOE's proposal does not require that every individual combination be tested for off mode, allowing sufficient use of AEDMs in order to reduce test burden.

The proposals also call for testing to determine performance for ICMs. Specifically, the proposals call for testing of one split system combination for each model of indoor unit sold by an ICM. While this change would increase test burden for these manufacturers, DOE believes it is the appropriate minimum test burden to validate ratings for these systems, as it is consistent with current requirements for OUMs, for which testing is required for every model of outdoor unit. DOE requests comment on this issue.

DOE allows manufacturers to pursue an alternative efficiency determination method process to certify products without the need of testing. In this notice, DOE revises and clarifies such requirements, as detailed in section III.B, to continue to enable manufacturers who wish to reduce testing burden to utilize this method.

As detailed in section III.C, manufacturers of certain products covered by test procedures waivers, have already utilized the alternative test procedures provided to them for certification testing. Thus, the inclusion of said alternative test procedures into the test procedure, as revised in this notice, does not add additional test burden.

In addition, DOE carefully considered the testing burden on manufacturers in proposing a modified off mode test procedure that is less burdensome than the proposals it made in the April 2011 SNOPR and October 2011 SNOPR and that addresses stakeholder comment regarding the test burden of such prior proposals. Further discussion regarding test burden associated with the proposals set forth in this notice for determining off mode power consumption can be found in section III.D.

DOE set forth proposals to improve test repeatability, improve the readability and clarity of the test procedure, and utilize industry procedures that manufacturers may be aware of in an effort to reduce the test burden. Sections III.E, III.F, and III.G presents additional detail regarding such proposals.

Although DOE proposes to change the current test procedure in a manner that would impact measured energy efficiency, amend existing requirements, and increase the testing time for such tests, DOE carefully considered the impact on testing burden and made efforts to balance accuracy, repeatability, and test burden during the course of the development of such proposals. Further discussion is found in section III.H.

Therefore, DOE determined that the proposed revisions to the central air conditioner and heat pump test procedure would produce test results that measure energy consumption during a period of representative use, and that the test procedure would not be unduly burdensome to conduct.

2. Potential Incorporation of International Electrotechnical Commission Standard 62301 and International Electrotechnical Commission Standard 62087

Under 42 U.S.C. 6295(gg)(2)(B), EPCA directs DOE to consider IEC Standard 62301 and IEC Standard 62087 when amending test procedures for covered products to include standby mode and off mode power measurements.

DOE reviewed IEC Standard 62301, ''Household electrical appliances—Measurement of standby power'' (Edition 2.0 2011–01),[43] and determined that the procedures contained therein for preparation of the unit under test and for conducting the test are already set forth in the amended test procedure, as proposed in this notice, for determining off mode power consumption and for determining the components (cyclic degradation coefficient) that make up standby power for central air conditioners and heat pumps. Therefore, DOE determined that referencing IEC Standard 62301 is not necessary for the proposed test procedure that is the subject of this rulemaking.

DOE reviewed IEC Standard 62087, ''Methods of measurement for the power consumption of audio, video, and related equipment'' (Edition 3.0 2011–04), and determined that it would not be applicable to measuring power consumption of HVAC products such as central air conditioners and heat pumps. Therefore, DOE determined that referencing IEC Standard 62087 is not necessary for the proposed test procedure that is the subject of this rulemaking.

[43] IEC Standard 62301 covers measurement of power consumption for standby mode and low power modes, as defined therein.

IV. Procedural Issues and Regulatory Review

A. Review Under Executive Order 12866

The Office of Management and Budget (OMB) has determined that test procedure rulemakings do not constitute ''significant regulatory actions'' under section 3(f) of Executive Order 12866, Regulatory Planning and Review, 58 FR 51735 (Oct. 4, 1993). Accordingly, this action was not subject to review under the Executive Order by the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget.

B. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires preparation of an initial regulatory flexibility analysis (IFRA) for any rule that by law must be proposed for public comment, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. As required by Executive Order 13272, ''Proper Consideration of Small Entities in Agency Rulemaking,'' 67 FR 53461 (August 16, 2002), DOE published procedures and policies on February 19, 2003, to ensure that the potential impacts of its rules on small entities are properly considered during the DOE rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel's Web site: *http://energy.gov/gc/office-general-counsel*.

DOE reviewed this proposed rule, which would amend the test procedure for central air conditioners and heat pumps, under the provisions of the Regulatory Flexibility Act and the procedures and policies published on February 19, 2003. DOE tentatively concludes and certifies that the proposed rule, if adopted, would not result in a significant impact on a substantial number of small entities. The factual basis for this certification is set forth below.

For the purpose of the regulatory flexibility analysis for this rule, the DOE adopts the Small Business Administration (SBA) definition of a small entity within this industry as a manufacturing enterprise with 750 employees or fewer. DOE used the small business size standards published on January 31, 1996, as amended, by the SBA to determine whether any small entities would be required to comply with the rule. 61 FR 3280, 3286, as amended at 67 FR 3041, 3045 (Jan. 23, 2002) and at 69 FR 29192, 29203 (May 21, 2004); see also 65 FR 30836, 30850 (May 15, 2000), as amended at 65 FR 53533, 53545 (Sept. 5, 2000). The size standards are codified at 13 CFR part 121. The standards are listed by North American Industry Classification System (NAICS) code and industry description and are available at *www.sba.gov/idc/groups/public/documents/sba_homepage/serv_sstd_tablepdf.pdf*.

Central air conditioner and heat pump manufacturing is classified under NAICS 333415, ''Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing.'' 70 FR 12395 (March 11, 2005). DOE reviewed AHRI's listing of central air conditioner and heat pump product manufacturer members and surveyed the industry to develop a list of domestic manufacturers. As a result of this review, DOE identified 22 manufacturers of central air conditioners and heat pumps, of which 15 would be considered small manufacturers with a total of approximately 3 percent of the market sales. DOE seeks comment on its estimate of the number of small entities that may be impacted by the proposed test procedure.

Potential impacts of the proposed test procedure on all manufacturers, including small businesses, come from impacts associated with the cost of proposed additional testing. In the June 2010 NOPR, DOE estimated the incremental cost of the proposed additional tests described in 10 CFR part 430, subpart B, Appendix M (proposed section 3.13) to be an increase of $1,000 to $1,500 per unit tested, indicating that the largest additional cost would be associated with conducting steady-state cooling mode tests and the dry climate tests for the SEER–HD rating). 75 FR at 31243 (June 2, 2010). DOE has eliminated tests associated with the SEER–HD rating from the proposals in this notice. DOE conservatively estimates that off mode testing might cost $1,000 (roughly one-fifth of the $5000 cost of active mode testing—see 75 FR at 31243 (June 2, 2010)). Assuming two off mode tests per tested model, this is an average test cost of $2,000 per model.

The proposals of this notice also require that ICMs test one combination of every basic model (*i.e.,* model of indoor unit). Based on a test cost estimate of $5000 and two tests per model, the costs for this proposal are $10,000 for each basic model.

Because the incremental cost of running the extra off mode tests is the same for all manufacturers, DOE believes that all manufacturers would incur comparable costs for testing to certify off mode power use for basic models as a result of the proposed test procedure. DOE expects that small manufacturers will incur less testing expense compared with larger manufacturers as a result of the proposed testing requirements because they have fewer basic models and thus require proportionally less testing when compared with large manufacturers that have many basic models. DOE recognizes, however, that smaller manufacturers may have less capital available over which to spread the increased costs of testing.

With respect to the provisions addressing AEDMs, the proposals contained herein would not increase the testing or reporting burden of outdoor unit manufacturers who currently use, or are eligible to use, an AEDM to certify their products. The proposal would eliminate the ARM nomenclature and treat these methods as AEDMs, eliminate the pre-approval requirement for product AEDMs, revise the requirements for validation of an AEDM in a way that would not require more testing than that required by the AEDM provisions included in the March 7, 2011 Certification, Compliance and Enforcement Final Rule (76 FR 12422) (''March 2011 Final Rule''), and amend the process that DOE promulgated in the March 2011 Final Rule for validating AEDMs and verifying certifications based on the use of AEDMs. Because these AEDM-related proposals would either have no effect on test burden or decrease burden related to testing (*e.g.,* elimination of ARM pre-approval), DOE has determined these proposals would result in no significant change in testing or reporting burden. The proposals contained herein would not increase the testing or reporting burden of outdoor unit or independent coil manufacturers besides the revision to the requirements for validation of an AEDM, of which burden is outweighed by the benefit of providing more accurate ratings for models of indoor units sold by ICMs, as discussed in section III.A.3.d.

To evaluate the potential cost impact of the other test-related proposals, DOE compared the cost of the testing to the total value added by the manufacturers to determine whether the impact of the proposed test procedure amendments is significant. The value added represents the net economic value that a business creates when it takes manufacturing inputs (*e.g.,* materials) and turns them into manufacturing outputs (*e.g.,* manufactured goods). Specifically, as defined by the U.S. Census, the value added statistic is calculated as the total value of shipments (products manufactured plus receipts for services rendered) minus the cost of materials, supplies, containers, fuel, purchased electricity, and contract work expenses.

DOE analyzed the impact on the smallest manufacturers of central air conditioners and heat pumps because these manufacturers would likely be the most vulnerable to cost increases. DOE calculated the additional testing expense as a percentage of the average value added statistic for the five individual firms in the 25 to 49 employee size category in NAICS 333415 as reported by the U.S. Census (U.S. Bureau of the Census, American Factfinder, 2002 Economic Census, Manufacturing, Industry Series, Industry Statistics by Employment Size, *http://factfinder.census.gov/servlet/EconSectorServlet?_lang=en&ds_name=EC0200A1&_SectorId=31&_ts=288639767147*). The average annual value for manufacturers in this size range from the census data was $1.26 million in 2001$, per the 2002 Economic Census, or approximately $1.52 million per year in 2009$ after adjusting for inflation using the implicit price deflator for gross domestic product (U.S. Department of Commerce Bureau of Economic Analysis, *www.bea.gov/national/nipaweb/SelectTable.asp*).

DOE also examined the average value added statistic provided by census for all manufacturers with fewer than 500 employees in this NAICS classification as the most representative value from the 2002 Economic Census data of the central air conditioner manufacturers with fewer than 750 employees that are considered small businesses by the SBA (15 manufacturers). The average annual value added statistic for all small manufacturers with fewer than 500 employees was $7.88 million (2009$).

Given this data, and assuming the range of estimates of additional costs, $2,000 for OUMs and $10,000 for ICMs for the additional testing costs, DOE concluded that the additional costs for testing of a single basic model product under the proposed requirements would be up to approximately 0.7 percent of annual value added for the 5 smallest firms, and approximately 0.13 percent of the average annual value added for all small central air conditioner or heat pump manufacturers (15 firms). DOE estimates that testing of basic models may not have to be updated more than once every 5 years, and therefore the average incremental burden of testing one basic model may be one fifth of these values when the cost is spread over several years.

DOE requires that only the highest sales volume split-system combinations be laboratory tested. 10 CFR 430.24(m). The majority of central air conditioners and heat pumps offered by a manufacturer are typically split-systems that are not required to be laboratory tested but can be certified using an alternative rating method that does not require DOE testing of these units. DOE reviewed the available data for five of the smallest manufacturers to estimate the incremental testing cost burden for those small firms that might experience the greatest relative burden from the revised test procedure. These manufacturers had an average of 10 models requiring testing (AHRI Directory of Certified Product Performance, *www.ahridirectory.org/ahridirectory/pages/home.aspx*), while large manufacturers will have well over 100 such models. The additional testing cost for final certification for 10 models was estimated at $4,000 to $100,000. Meanwhile, these certifications would be expected to last the product life, estimated to be at least 5 years based on the time frame established in EPCA for DOE review of central air conditioner efficiency standards. This test burden is therefore estimated to be approximately 1.3 percent of the estimated 5-year value added for the smallest five manufacturers. DOE believes that these costs are not significant given other, much more significant costs that the small manufacturers of central air conditioners and heat pumps incur in the course of doing business. DOE seeks comment on its estimate of the impact of the proposed test procedure amendments on small entities and its conclusion that this impact is not significant.

Accordingly, as stated above, DOE tentatively concludes and certifies that this proposed rule would not have a significant economic impact on a substantial number of small entities. Accordingly, DOE has not prepared an initial regulatory flexibility analysis (IRFA) for this rulemaking. DOE will provide its certification and supporting statement of factual basis to the Chief Counsel for Advocacy of the SBA for review under 5 U.S.C. 605(b).

C. Review Under the Paperwork Reduction Act of 1995

Manufacturers of central air conditioners and heat pumps must certify to DOE that their products comply with any applicable energy conservation standards. In certifying compliance, manufacturers must test their products according to the DOE test procedures for central air conditioners and heat pumps, including any amendments adopted for those test procedures. DOE has established regulations for the certification and recordkeeping requirements for all covered consumer products and commercial equipment, including central air conditioners and heat pumps. 76 FR 12422 (March 7, 2011); 80 FR 5099 (Jan. 30, 2015). The collection-of-information requirement for the certification and recordkeeping is subject to review and approval by OMB under the Paperwork Reduction Act (PRA). This requirement has been approved by OMB under OMB control number 1910–1400. Public reporting burden for the certification is estimated to average 20 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the PRA, unless that collection of information displays a currently valid OMB Control Number.

D. Review Under the National Environmental Policy Act of 1969

In this supplemental proposed rule, DOE proposes test procedure amendments that it expects will be used to develop and implement future energy conservation standards for central air conditioners and heat pumps. DOE has determined that this rule falls into a class of actions that are categorically excluded from review under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*) and DOE's implementing regulations at 10 CFR part 1021. Specifically, this proposed rule would amend the existing test procedures without affecting the amount, quality or distribution of energy usage, and, therefore, would not result in any environmental impacts. Thus, this rulemaking is covered by Categorical Exclusion A5 under 10 CFR part 1021, subpart D, which applies to any rulemaking that interprets or amends an existing rule without changing the environmental effect of that rule. Accordingly, neither an environmental assessment nor an environmental impact statement is required.

DOE's CX determination for this proposed rule is available at *http://energy.gov/nepa/categorical-exclusion-cx-determinations-cx*

E. Review Under Executive Order 13132

Executive Order 13132, ''Federalism,'' 64 FR 43255 (August 4, 1999) imposes certain requirements on agencies formulating and implementing policies or regulations that preempt State law or that have Federalism implications. The Executive Order requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and to carefully assess the necessity for such actions. The Executive Order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have Federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process it will follow in the development of such regulations. 65 FR 13735. DOE has examined this proposed rule and has determined that it would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the products that are the subject of this proposed rule. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in EPCA. (42 U.S.C. 6297(d)) No further action is required by Executive Order 13132.

F. Review Under Executive Order 12988

Regarding the review of existing regulations and the promulgation of new regulations, section 3(a) of Executive Order 12988, ''Civil Justice Reform,'' 61 FR 4729 (Feb. 7, 1996), imposes on Federal agencies the general duty to adhere to the following requirements: (1) Eliminate drafting errors and ambiguity; (2) write regulations to minimize litigation; (3) provide a clear legal standard for affected conduct rather than a general standard; and (4) promote simplification and burden reduction. Section 3(b) of Executive Order 12988 specifically requires that Executive agencies make every reasonable effort to ensure that the regulation: (1) Clearly specifies the preemptive effect, if any; (2) clearly specifies any effect on existing Federal law or regulation; (3) provides a clear legal standard for affected conduct while promoting simplification and burden reduction; (4) specifies the retroactive effect, if any; (5) adequately defines key terms; and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. Section 3(c) of Executive Order 12988 requires Executive agencies to review regulations in light of applicable standards in sections 3(a) and 3(b) to determine whether they are met or it is unreasonable to meet one or more of them. DOE has completed the required review and determined that, to the extent permitted by law, the proposed rule meets the relevant standards of Executive Order 12988.

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. Pub. L. 104–4, sec. 201 (codified at 2 U.S.C. 1531). For a proposed regulatory action likely to result in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of $100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a proposed ''significant intergovernmental mandate,'' and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect small governments. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820; also available at *http://energy.gov/gc/office-general-counsel*. DOE examined this proposed rule according to UMRA and its statement of policy and determined that the rule contains neither an intergovernmental mandate, nor a mandate that may result in the expenditure of $100 million or more in any year, so these requirements do not apply.

H. Review Under the Treasury and General Government Appropriations Act, 1999

Section 654 of the Treasury and General Government Appropriations Act, 1999 (Pub. L. 105–277) requires Federal agencies to issue a Family Policymaking Assessment for any rule that may affect family well-being. This rule would not have any impact on the autonomy or integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

I. Review Under Executive Order 12630

DOE has determined, under Executive Order 12630, ''Governmental Actions and Interference with Constitutionally Protected Property Rights'' 53 FR 8859 (March 18, 1988), that this regulation would not result in any takings that might require compensation under the Fifth Amendment to the U.S. Constitution.

J. Review Under the Treasury and General Government Appropriations Act, 2001

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516 note) provides for agencies to review most disseminations of information to the public under guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (Feb. 22, 2002), and DOE's guidelines were published at 67 FR 62446 (Oct. 7, 2002). DOE has reviewed this proposed rule under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

K. Review Under Executive Order 13211

Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use,'' 66 FR 28355 (May 22, 2001), requires Federal agencies to prepare and submit to OMB, a Statement of Energy Effects for any proposed significant energy action. A ''significant energy action'' is defined as any action by an agency that promulgated or is expected to lead to promulgation of a final rule, and that: (1) Is a significant regulatory action under Executive Order 12866, or any successor order; and (2) is likely to have a significant adverse effect on the supply, distribution, or use of energy; or (3) is designated by the Administrator of OIRA as a significant energy action. For any proposed significant energy action, the agency must give a detailed statement of any adverse effects on energy supply, distribution, or use should the proposal be implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use.

The proposed regulatory action to amend the test procedure for measuring the energy efficiency of central air conditioners and heat pumps is not a significant regulatory action under Executive Order 12866. Moreover, it would not have a significant adverse effect on the supply, distribution, or use of energy, nor has it been designated as a significant energy action by the Administrator of OIRA. Therefore, it is not a significant energy action, and, accordingly, DOE has not prepared a Statement of Energy Effects.

L. Review Under Section 32 of the Federal Energy Administration Act of 1974

Under section 301 of the Department of Energy Organization Act (Pub. L. 95–91; 42 U.S.C. 7101), DOE must comply with section 32 of the Federal Energy Administration Act of 1974, as amended by the Federal Energy Administration Authorization Act of 1977. (15 U.S.C. 788; FEAA) Section 32 essentially provides in relevant part that, where a proposed rule authorizes or requires use of commercial standards, the notice of proposed rulemaking must inform the public of the use and background of such standards. In addition, section 32(c) requires DOE to consult with the Attorney General and the Chairman of the Federal Trade Commission (FTC) concerning the impact of the commercial or industry standards on competition.

The proposed rule incorporates testing methods contained in the following commercial standards: AHRI 210/240–2008 with Addendum 1 and 2, Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment; and ANSI/AHRI 1230–2010 with Addendum 2, Performance Rating of Variable Refrigerant Flow Multi-Split Air-Conditioning and Heat Pump Equipment. While the proposed test procedure is not exclusively based on AHRI 210/240–2008 or ANSI/AHRI 1230–2010, one component of the test procedure, namely test setup requirements, adopts language from AHRI 210/240–2008 without amendment; and another component of the test procedure, namely test setup and test performance requirements for multi-split-systems, adopts language from ANSI/AHRI 1230–2010 without amendment. The Department has evaluated these standards and is unable to conclude whether they fully comply with the requirements of section 32(b) of the FEAA, (*i.e.,* that they were developed in a manner that fully provides for public participation, comment, and review). DOE will consult with the Attorney General and the Chairman of the FTC concerning the impact of these test procedures on competition, prior to prescribing a final rule.

M. Description of Materials Incorporated by Reference

In this SNOPR, DOE proposes to incorporate by reference (IBR) the following two test standards published by AHRI: ANSI/AHRI 210/240–2008 with Addenda 1 and 2, titled ''Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment;'' and ANSI/AHRI 1230–2010 with Addendum 2, titled ''Performance Rating of Variable Refrigerant Flow (VRF) Multi-Split Air-Conditioning and Heat Pump Equipment.'' DOE also proposes to IBR a draft version of ASHRAE 210/240 which has not yet been published. DOE also proposes to update its IBR to the most recent version of the following standards published by ASHRAE: ASHRAE 23.1–2010 titled ''Methods of Testing for Rating the Performance of Positive Displacement Refrigerant Compressors and Condensing Units that Operate at Subcritical Temperatures of the Refrigerant'', ASHRAE Standard 37–2009, Methods of Testing for Rating Electrically Driven Unitary Air-Conditioning and Heat Pump Equipment, ASHRAE 41.1–2013 titled ''Standard Method for Temperature Measurement'', ASHRAE 41.6–2014 titled ''Standard Method for Humidity Measurement'', and ASHRAE 41.9–2011titled ''Standard Methods for Volatile-Refrigerant Mass Flow Measurements Using Calorimeters''. Finally, DOE proposes to updates its IBR to the most recent version of the following test procedure from ASHRAE and AMCA: ASHRAE/AMCA 51–07/210–07, Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating.

ANSI/AHRI 210/240–2008 is an industry accepted test procedure that measures the cooling and heating performance of central air conditioners and heat pumps and is applicable to products sold in North America. The test procedure proposed in this SNOPR references various sections of ANSI/AHRI 210/240–2008 that address test setup, test conditions, and rating requirements. ANSI/AHRI 210/240–2008 is readily available on AHRI's Web site at *http://www.ahrinet.org/site/686/Standards/HVACR-Industry-Standards/Search-Standards*. AHRI Standard 210/240-Draft is a draft version of AHRI 210/240 that AHRI provided to DOE in 2015. AHRI Standard 210/240-Draft will supersede the 2008 version once it is published. The draft version is available on the rulemaking Web page (Docket EERE–2009–BT–TP–0004–0045).

ANSI/AHRI 1230–2010 is an industry accepted test procedure that measures the cooling and heating performance of variable refrigerant flow (VRF) multi-split air conditioners and heat pumps and is applicable to products sold in North America. The test procedure proposed in this SNOPR for VRF multi-split systems references various sections of ANSI/AHRI 1230–2010 that address test setup, test conditions, and rating requirements. ANSI/AHRI 1230–2010 is readily available on AHRI's Web site at *http://www.ahrinet.org/site/686/Standards/HVACR-Industry-Standards/Search-Standards*.

ASHRAE 23.1–2010 is an industry accepted test procedure for rating the thermodynamic performance of positive displacement refrigerant compressors and condensing units that operate at subcritical temperatures. The test procedure proposed in this SNOPR references sections of ASHRAE 23.1–2010 that address requirements, instruments, methods of testing, and testing procedure specific to compressor calibration. ASHRAE 23.1–2010 can be purchased from ASHRAE's Web site at *https://www.ashrae.org/resources-publications*.

ASHRAE Standard 37–2009 is an industry accepted standard that provides test methods for determining the cooling capacity of unitary air-conditioning equipment and the cooling or heating capacities, or both, of unitary heat pump equipment. The test procedure proposed in this SNOPR references various sections of ASHRAE Standard 37–2009 that address test conditions and test procedures. The current DOE test procedure references a previous version of this standard, ASHRAE 37–2005. ASHRAE Standard 37–2009 can be purchased from ASHRAE's Web site at *https://www.ashrae.org/resources-publications*.

ASHRAE 41.1–2013 is an industry accepted method for measuring temperature in testing heating, refrigerating, and air-conditioning equipment. The test procedure proposed in this SNOPR references sections of ASHRAE 41.1–2013 that address requirements, instruments, and methods for measuring temperature. ASHRAE 41.1–2013 can be purchased from ASHRAE's Web site at *https://www.ashrae.org/resources-publications*.

ASHRAE 41.6–2014 is an industry accepted test method for measuring humidity of moist air. The test procedure proposed in this SNOPR references sections of ASHRAE 41.6–2014 that address requirements, instruments, and methods for measuring humidity. ASHRAE 41.6–2014 can be purchased from ASHRAE's Web site at *https://www.ashrae.org/resources-publications*.

ASHRAE 41.9–2011 is an industry accepted standard that provides recommended practices for measuring the mass flow rate of volatile refrigerants using calorimeters. The test procedure proposed in this SNOPR references sections of ASHRAE 41.9–2011 that address requirements, instruments, and methods for measuring refrigerant flow during compressor calibration. ASHRAE 41.9–2011 can be purchased from ASHRAE's Web site at *https://www.ashrae.org/resources-publications*.

ASHRAE/AMCA 51–07/210–07 is an industry accepted standard that establishes uniform test methods for a laboratory test of a fan or other air moving device to determine its aerodynamic performance in terms of air flow rate, pressure developed, power consumption, air density, speed of rotation, and efficiency for rating or guarantee purposes. The test procedure in this SNOPR references various sections of ASHRAE/AMCA 51–07/210–07 that address test conditions. The current DOE test procedure references a previous version of this standard, ASHRAE/AMCA 51–99/210–99. ASHRAE/AMCA 51–07/210–07 can be purchased from AMCA's Web site at *http://www.amca.org/store/index.php*.

V. Public Participation

A. Submission of Comments

DOE will accept comments, data, and information regarding this proposed rule no later than the date provided in the **DATES** section at the beginning of this proposed rule. Interested parties may submit comments using any of the methods described in the **ADDRESSES** section at the beginning of this notice.

Submitting comments via regulations.gov. The regulations.gov Web page will require you to provide your name and contact information. Your contact information will be viewable to DOE Building Technologies staff only. Your contact information will not be publicly viewable except for your first and last names, organization name (if any), and submitter representative name (if any). If your comment is not processed properly because of technical difficulties, DOE will use this information to contact you. If DOE cannot read your comment due to technical difficulties and cannot contact you for clarification, DOE may not be able to consider your comment.

However, your contact information will be publicly viewable if you include it in the comment or in any documents attached to your comment. Any information that you do not want to be publicly viewable should not be included in your comment, nor in any document attached to your comment. Persons viewing comments will see only first and last names, organization names, correspondence containing comments, and any documents submitted with the comments.

Do not submit to regulations.gov information for which disclosure is restricted by statute, such as trade secrets and commercial or financial information (hereinafter referred to as Confidential Business Information (CBI)). Comments submitted through regulations.gov cannot be claimed as CBI. Comments received through the Web site will waive any CBI claims for the information submitted. For information on submitting CBI, see the Confidential Business Information section.

DOE processes submissions made through regulations.gov before posting. Normally, comments will be posted within a few days of being submitted. However, if large volumes of comments are being processed simultaneously, your comment may not be viewable for up to several weeks. Please keep the comment tracking number that regulations.gov provides after you have successfully uploaded your comment.

Submitting comments via email, hand delivery, or mail. Comments and documents submitted via email, hand delivery, or mail also will be posted to regulations.gov. If you do not want your personal contact information to be publicly viewable, do not include it in your comment or any accompanying documents. Instead, provide your contact information on a cover letter. Include your first and last names, email address, telephone number, and optional mailing address. The cover letter will not be publicly viewable as long as it does not include any comments.

Include contact information each time you submit comments, data, documents, and other information to DOE. If you submit via mail or hand delivery, please provide all items on a CD, if feasible. It is not necessary to submit printed copies. No facsimiles (faxes) will be accepted.

Comments, data, and other information submitted to DOE electronically should be provided in PDF (preferred), Microsoft Word or Excel, WordPerfect, or text (ASCII) file format. Provide documents that are not secured, written in English and free of any defects or viruses. Documents should not contain special characters or any form of encryption and, if possible, they should carry the electronic signature of the author.

Campaign form letters. Please submit campaign form letters by the originating organization in batches of between 50 to 500 form letters per PDF or as one form letter with a list of supporters' names compiled into one or more PDFs. This reduces comment processing and posting time.

Confidential Business Information. According to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit via email, postal mail, or hand delivery two well-marked copies: One copy of the document marked confidential including all the information believed to be confidential, and one copy of the document marked non-confidential with the information believed to be confidential deleted. Submit these documents via email or on a CD, if feasible. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

Factors of interest to DOE when evaluating requests to treat submitted information as confidential include: (1) A description of the items; (2) whether and why such items are customarily treated as confidential within the industry; (3) whether the information is generally known by or available from other sources; (4) whether the information has previously been made available to others without obligation concerning its confidentiality; (5) an explanation of the competitive injury to the submitting person which would result from public disclosure; (6) when such information might lose its confidential character due to the passage of time; and (7) why disclosure of the information would be contrary to the public interest.

It is DOE's policy that all comments may be included in the public docket, without change and as received, including any personal information provided in the comments (except information deemed to be exempt from public disclosure).

B. Issues on Which DOE Seeks Comment

Although DOE welcomes comments on any aspect of this proposal, DOE is particularly interested in receiving comments and views of interested parties concerning the following issues:

1. The details characterizing the same model of indoor unit, same model of outdoor unit, and same single-package model;

2. Its proposed changes to the determination of certified ratings for single-split-system air conditioners, specifically in its proposed phased approach where in the first phase

manufacturers must certify all models of outdoor units with the model of coil-only indoor unit that is likely to have the largest volume of retail sales with the particular model of outdoor unit but may use the model of blower coil indoor unit likely to have the highest sales if the model of outdoor unit is sold only with models of blower coil indoor units, and may use testing or AEDMs to rate other combinations; and in the second phase manufacturers must certify all models of outdoor units with the model of blower coil indoor unit that is likely to have the largest volume of retail sales with that model of outdoor unit but must rate other blower coil or coil-only combinations through testing or AEDMs;

3. Its proposed definitions for blower coil and coil-only indoor units;

4. Whether additional testing and rating requirements are necessary for multi-split systems paired with models of conventional ducted indoor units rather than short-duct units;

5. Whether manufacturers or other stakeholders support ratings for mix-match multi-split systems including models of both SDHV and non-ducted or short-ducted indoor units, and if so, how they should be rated (*i.e.,* by by taking the mean of a sample of tested non-ducted units and a sample of tested SDHV units or by testing a combination on non-ducted and SDHV units), and whether the SDHV or split-system standard would be most appropriate;

6. Whether manufacturers support having the ability to test mix-match systems using the test procedure rather than rating them using an average of the other tested systems;

7. Whether manufacturers support the rating of mix-match systems using other than a straight mean, such as a weighting by the number of non-ducted or short-ducted units;

8. Whether the definition of ''tested combination'' is appropriate for rating specific individual combinations, or whether manufacturers want more flexibility such as testing with more than 5 indoor units;

9. Information and data on manufacturing and testing variability associated with multi-split systems that would allow it to understand how a single unit may be representative of the population and what tolerances would need to be applied to ratings based on a single unit sample in order to account for variability;

10. The basic model definition in section III.A.1;

11. Its proposal for ICMs to test each model of indoor unit with the lowest-SEER model of outdoor unit that is certified as a part of a basic model by an OUM as well as any test burden associated with this proposal;

12. The likelihood of multiple individual models of single-package units meeting the requirements proposed in the basic model definition to be assigned to the same basic model;

13. Whether, if manufacturers are able to assign multiple individual single-package models to a single basic model, whether manufacturers would want to use an AEDM to rate other individual models within the same basic model other than the lowest SEER individual model;

14. Whether manufacturers would want to employ an AEDM to rate the off-mode power consumption for other variations of off-mode associated with the single-package basic model other than the variation tested;

15. The reporting burden associated with the proposed certification reporting requirements proposed in this notice;

16. The additions to the represented value requirements for cooling capacity, heating capacity, and SHR, as well as the proposed rounding requirements;

17. The proposal to not require additional testing to validate an AEDM beyond the testing required under 429.16(a)(2)(ii) for split-system air conditioners and heat pumps where manufacturers must test each basic model, being each model of outdoor unit, with at least one model of indoor unit;

18. The proposal that ICMs must use the combinations they would be required to test, under 429.16, to validate an AEDM that is intended to be used for other individual combinations within each basic model;

19. Whether the approach to not penalize manufacturers for applying conservative ratings to their products is reasonable to identify an individual combination's failure to meet its certified rating;

20. Whether manufacturers would typically apply more than one AEDM, and if they would, the differences between such AEDMs;

21. Its proposal for multi-circuit products to adopt the same common duct testing approach used for testing multi-split products; and whether this method will yield accurate results that are representative of the true performance of these systems;

22. Its proposals for multi-blower products, including whether individual adjustments of each blower are appropriate and whether external static pressures measured for individual tests may be different;

23. Its proposal to require a test for off mode power consumption at 72±2 °F, a second test at the temperature below a turn-on temperature specified by the manufacturer, a tolerance on the temperature, and the proposal that manufacturers include in certification reports the temperatures at which the crankcase heater is designed to turn on and turn off for the heating season, if applicable;

24. The proposal to replace the off mode test at 57 °F with a test at a temperature which is 5±2 °F below a manufacturer-specified turn-on temperature to maintain the intent of the off mode power consumption rating as a rating that measures the off mode power consumption for the heating season, and allay the stakeholders' concerns of a loophole at the 57 °F test point;

25. The proposal to use a per-compressor off mode power consumption metric so as to not penalize manufacturers of products with multiple compressor systems, which are highly efficient and require larger crankcase heaters for safe and reliable operation;

26. The proposal on the multiplier of 1.5 for determining the shoulder season and heating season per-compressor off mode power so as to not penalize manufacturers of products with modulated compressors, which require a larger crankcase heater to ensure safe and reliable operation;

27. The proposal to more accurately reflect the off mode power consumption for coil-only and blower coil split-system units by excluding the low-voltage power from the indoor unit when measuring off mode power consumption for coil-only split-system air conditioners and including the low-voltage power from the indoor unit when measuring off mode power consumption for blower coil split-system air conditioning and heat pumps;

28. The proposal to incent manufacturers of products with time delays by adopting a credit to shoulder season energy consumption that is proportional to the duration of the delay or a default of 25% savings in shoulder season off mode energy consumption and the possibility of a verification test for length of time delay;

29. The proposal to add optional informational equations to determine the actual off mode energy consumption, based on the hours of off mode operation and off mode power for the shoulder and heating seasons;

30. Whether regulating crankcase heater energy consumption has a negative impact on product reliability in light of the test method proposed in this rule;

31. The proposal to improve repeatability of testing central air conditioner and heat pump products by requiring the lowest fan speed setting that meets minimum static pressure and maximum air volume rate requirements for blower coil systems and requiring the lowest fan speed settings that meets the maximum static pressure and maximum air volume rate requirements for coil-only indoor units;

32. The proposal to mirror how insulation is installed in the field by requiring test laboratories either install the insulation shipped with the unit or use insulation as specified in the manufacturer's installation manuals included with the unit;

33. The proposal to clarify liquid refrigerant line insulation requirements by requiring such insulation only if the product is a heating-only heat pump;

34. The proposal to prevent thermal losses from the refrigerant mass flow meter to the floor by requiring a thermal barrier if the meter is not mounted on a pedestal or is not elevated;

35. The proposal to require either an air sampling device used on all outdoor unit air-inlet surfaces or demonstration of air temperature uniformity for the outdoor unit vis-a-vis 1.5 °F maximum spread of temperatures measured by thermocouples distributed one thermocouple per square feet of air-inlet surface of the outdoor unit;

36. The proposal to require that the dry bulb temperature and humidity measurements used to verify that the required outdoor air conditions have been maintained be measured for the air collected by the air sampling device (*e.g.,* rather than being measured by temperature sensors located in the air stream approaching the air inlets);

37. The proposal to limit thermal losses by preventing the air sampling device from nearing the test chamber floor, insulating air sampling device surfaces, and requiring dry bulb and humidity measurements be made at the same location in the air sampling device;

38. The proposal to fix maximum compressor speed when testing at each of the outdoor temperature for those control systems that vary maximum compressor speed with outdoor temperature;

39. The proposal to prevent improper refrigerant charging techniques by requiring charging of near-azeotropic and zeotropic refrigerant blends in the liquid state only;

40. The proposal to require, for air conditioners and cooling-and-heating heat pumps refrigerant charging at the A or A_2 test condition, and for heating-only heat pumps refrigerant charging at the H_1 or $H1_2$ test condition, to meet a 12 ± 2 °F superheat temperature requirement for units equipped with fixed orifice type metering devices and a 10 ± 2 °F subcooling temperature requirement for units equipped with thermostatic expansion valve or electronic expansion valve type metering devices, if no manufacturer installation instructions provide guidance on charging procedures;

41. The proposal to verify functionality of heat pumps at the H_1 or $H1_2$ test condition after charging at the A or A_2 test condition, and if non-functional, the proposal to adjust refrigerant charge to the requirements of the proposed standardized charging procedure at the H_1 or $H1_2$ test condition;

42. The proposal to require refrigerant charging based on the outdoor installation instructions for outdoor unit manufacturer products and refrigerant charging based on the indoor installation instructions for independent coil manufacturer products, where both the indoor and outdoor installation instructions are provided and advise differently, unless otherwise specified by either installation instructions;

43. The proposal to require installation of pressure gauges and verification of refrigerant charge amount and, if charging instructions are not available adjust charge based on the proposed refrigerant charging procedure;

44. All aspects of its proposals to amend the refrigerant charging procedures;

45. The proposal to allow for cyclic tests of single-package ducted units an upturned duct as an alternative arrangement to replace the currently-required damper in the inlet portion of the indoor air ductwork;

46. The proposal to further justify adequacy of the alternative arrangement in preventing thermal losses during the OFF portion of the cyclic test by proposing installing a dry bulb temperature sensor near the indoor inlet and requiring the maximum permissible range of the recorded temperatures during the OFF period be no greater than 1.0 °F;

47. The proposed revisions to the cyclic test procedure for the determination of both the cooling and heating coefficient of degradation, including additional test data that would support the proposed specifications, or changes to, the number of warm-up cycles, the cycle time for variable speed units, the number of cycles averaged to obtain the value, and the stability criteria;

48. The proposal to allay stakeholder concerns regarding compressor break-in period by allowing an optional break-in period of up to 20 hours prior to testing;

49. Its proposed limitation of incorporation by reference to industry standards to specific sections necessary for the test procedure, including any specific sections stakeholders feel should be referenced that are not;

50. The proposed sampling interval for dry-bulb temperatures, wet bulb temperature, dew point temperature, and relative humidity;

51. The appropriate use of the target value and maximum tolerances for refrigerant charging, as well as data to support the appropriate selection of tolerance;

52. The proposal for damping pressure transducer signals including whether the proposed maximum time constant is appropriate;

53. Setting a definition for short duct systems to mean ducted systems whose indoor units can deliver no more than 0.07 in. wc. ESP when delivering the full load air volume rate for cooling operation, and requiring such systems meet the minimum ESP levels as proposed in the NOPR: 0.03 in. wc. for units less than 28,800 Btu/h; 0.05 in. wc. for units between 29,000 Btu/h and 42,500 Btu/h; and 0.07 in. wc. for units greater than 43,000 Btu/h;

54. The incorporation by reference of AHRI 1230–2010, and in particular the specific sections of Appendix M and AHRI 1230–2010 that DOE proposes to apply to testing VRF systems;

55. The proposed change to the informative tables at the beginning of Section 2. Testing Conditions and/or whether additional modifications to the new table could be implemented to further improve clarity;

56. Its proposal to delete the definition of mini-split air conditioners and heat pumps, and define (1) single-zone-multiple-coil split-system to represent a split-system that has one outdoor unit and that has two or more coil-only or blower coil indoor units connected with a single refrigeration circuit, where the indoor units operate in unison in response to a single indoor thermostat; and (2) single-split-system to represent a split-system that has one outdoor unit and that has one coil-only or blower coil indoor unit connected to its other component(s) with a single refrigeration circuit;

57. Its proposal to include in the ESP requirement a pressure drop contribution associated with average typical filter and indoor coil fouling levels and its use of residential-based indoor coil and filter fouling pressure drop data to estimate the appropriate

ESP contribution; DOE also requests data that would validate the proposed ESP contributions or suggest adjustments that should be made to improve representativeness of the values in this proposal;

58. Its proposals to set higher minimum ESP requirements for systems other than multi-split systems and small-duct, high-velocity systems and report the external static pressure used during their certification tests;

59. Its proposal to implement an allowance in ESP for air-conditioning units tested in blower-coil (or single-package) configuration in which a condensing furnace is in the air flow path during the test. DOE seeks comment regarding the proposed 0.1 in. wc. ESP reduction for such tests, including test data to support suggestions regarding different reductions.

60. Its proposal to revise the heating load line that shifts the heating balance point and zero load point to lower ambient temperatures that better reflect field operations and energy use characteristics, as well as its proposal to perform cyclic testing for variable speed heat pumps at 47 °F instead of at 62 °F;

61. Whether, in the case that the proposed heating load line is not adopted, DOE should modify the HSPF rating procedure for variable speed heat pumps at mid-range outdoor temperatures using option 1: Which entails basing performance on minimum speed tests at 47 °F and intermediate speed test at 35 °F and is the less accurate option but has no additional test burden; or option 2: Which entails basing performance on minimum speed tests at 47 °F and at 35 °F and is more accurate but with higher test burden;

62. Test results and other data regarding whether HSPF results for other variable speed heat pumps would be more significantly impacted by this change to the test procedure to test at maximum speed at 2 °F outdoor temperature or at low cutoff temperature, whichever is higher (in conjunction with the test at maximum speed at 17 °F outdoor temperature) as well as whether the additional test burden would offset the advantages of the proposed modification;

63. The estimate of the number of small entities that may be impacted by the proposed test procedure and its conclusion that the impact is not significant.

VI. Approval of the Office of the Secretary

The Secretary of Energy has approved publication of this proposed rule.

List of Subjects

10 CFR Part 429

Administrative practice and procedure, Confidential business information, Energy conservation, Reporting and recordkeeping requirements.

10 CFR Part 430

Administrative practice and procedure, Confidential business information, Energy conservation, Energy conservation test procedures, Household appliances, Imports, Incorporation by reference, Intergovernmental relations, Small businesses.

Issued in Washington, DC, on August 21, 2015.

Kathleen B. Hogan,

Deputy Assistant Secretary for Energy Efficiency, Energy Efficiency and Renewable Energy.

For the reasons set forth in the preamble, DOE proposes to amend parts 429 and 430 of chapter II of Title 10, Subpart B, Code of Federal Regulations, to read as follows:

PART 429—CERTIFICATION, COMPLIANCE, AND ENFORCEMENT FOR CONSUMER PRODUCTS AND COMMERCIAL AND INDUSTRIAL EQUIPMENT

■ 1. The authority citation for part 429 continues to read as follows:

Authority: 42 U.S.C. 6291–6317.

■ 2. Amend § 429.12 by revising paragraphs (b)(8) and (12) to read as follows:

§ 429.12 General requirements applicable to certification reports.

* * * * *

(b) * * *

(8) The test sample size (*i.e.,* number of units tested for the basic model, or in the case of single- split-system central air conditioners and central air conditioning heat pumps, for each individual combination). Enter ''0'' if an AEDM was used in lieu of testing;

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(12) If the test sample size is listed as ''0'' to indicate the certification is based upon the use of an alternate way of determining measures of energy conservation, identify the method used for determining measures of energy conservation (such as ''AEDM,'' or linear interpolation). Manufacturers of commercial packaged boilers, commercial water heating equipment, commercial refrigeration equipment, and commercial HVAC equipment must provide the manufacturer's designation (name or other identifier) of the AEDM used; and

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■ 3. Section 429.16 is revised to read as follows:

§ 429.16 Central air conditioners and central air conditioning heat pumps.

(a) *Determination of Certified Rating.* Determine the certified rating for each basic model through testing pursuant to paragraph (a)(1)(ii) of this section. For single-split-systems, manufacturers must certify additional ratings for each individual combination within the same basic model either based on testing or by using an AEDM subject to the limitations of paragraph (a)(2) of this section. This includes blower coil and coil-only systems both before and after the compliance date of any amended energy conservation standards. For multi-split, multi-circuit, and single-zone-multiple-coil systems, each basic model must include a rating for a non-ducted combination and may also include ratings for a ducted combination and a mixed non-ducted/short-ducted combination per the requirements specified in this section. If individual models of single-package systems or individual combinations of split-systems that are otherwise identical are offered with multiple options for off mode-related components, rate the individual model/combination with the crankcase heater and controls that are the most consumptive. A manufacturer may also certify less consumptive off mode options; however, the manufacturer must differentiate the individual model numbers in its certification report.

(1) *Units to be tested.*

(i) *General.* The general requirements of § 429.11 apply to central air conditioners and heat pumps; and

(ii) *Model selection for testing.* (A) Except for single-split-system non-space-constrained air conditioners, determine represented values for each basic model through testing of the following, specific, individual model or combination pursuant to the table below.

Category	Equipment type	Must test each:	With:
Single-Package Unit	Single-Package AC	Basic Model	Lowest SEER individual model.

Category	Equipment type	Must test each:	With:
	Single-Package HP.		
	Space-Constrained Single-Package AC.		
	Space-Constrained Single-Package HP.		
Outdoor Unit and Indoor Unit (Rated by OUM).	Single-Split-System HP	Model of Outdoor Unit	The model of indoor unit that is likely to have the largest volume of retail sales with the particular model of outdoor unit.
	Space-Constrained Split-System AC.		
	Space-Constrained Split-System HP.		
	Multi-Split, Multi-Circuit, or Single-Zone-Multiple-Coil Split System.	Model of Outdoor Unit	At a minimum, a "tested combination" composed entirely of non-ducted indoor units. For any models of outdoor units also sold with models of short-ducted indoor units, a second "tested combination" composed entirely of short-ducted indoor units must be tested (in addition to the non-ducted combination). For any models of outdoor units also sold with models of SDHV indoor units, a second (or third) "tested combination" composed entirely of SDHV units must be tested (in addition to the non-ducted combination and, if tested, the short-ducted combination).
Indoor Unit Only (Rated by ICM).	Single-Split-System	Model of Indoor Unit	Least efficient model of outdoor unit with which it will be paired, where the least efficient model of outdoor unit is the outdoor unit in the lowest SEER combination as certified by the OUM). If there are multiple models of outdoor units with the same lowest-SEER rating, the ICM may select one for testing purposes.
	Small-Duct, High Velocity Systems.		
Outdoor Unit Only	Outdoor Unit Only	Model of Outdoor Unit	Model of indoor unit meeting the requirements of section 2.2e of Appendix M (or M1) to Subpart B of 10 CFR Part 430.

(B) For single-split-system, non-space-constrained air conditioners rated by OUMs, determine represented values for each basic model through testing of the following, specific, individual combination, with requirements depending on date and pursuant to the table below.

Date	Equipment type	Must test each:	With:
Before the compliance date of any amended energy conservation standards (with a compliance date after January 1, 2017).	Split-System AC with single capacity condensing unit.	Model of Outdoor Unit	The model of coil-only indoor unit that is likely to have the largest volume of retail sales with the particular model of outdoor unit.
	Split-System AC with other than single capacity condensing unit.	Model of Outdoor Unit	The model of coil-only indoor unit that is likely to have the largest volume of retail sales with the particular model of outdoor unit, unless the model of outdoor unit is only sold with model(s) of blower coil indoor units, in which case the model of blower coil indoor unit (with designated air mover as applicable) that is likely to have the largest volume of retail sales with the particular model of outdoor unit.
On or after the compliance date of any amended energy conservation standards with which compliance is required on or after January 1, 2017.	Split-system AC	Model of Outdoor Unit	The model of blower coil indoor unit that is likely to have the largest volume of retail sales with the particular model of outdoor unit.

(iii) *Sampling plans and representative values.* (A) Each basic model (for single-package systems) or individual combination (for split–systems) tested must have a sample of sufficient size tested in accordance with the applicable provisions of this subpart. The represented values for any basic model or individual combination must be assigned such that:

(*1*) Any represented value of power consumption or other measure of energy consumption for which consumers would favor lower values must be greater than or equal to the higher of:

(*i*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the i^{th} sample; Or, (*ii*) The upper 90 percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.90}(\frac{s}{\sqrt{n}})$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.90}$ is the t statistic for a 90% one-tailed confidence interval with n–1 degrees of freedom (from Appendix D).

(*2*) Any represented value of the energy efficiency or other measure of energy consumption for which consumers would favor higher values shall be less than or equal to the lower of:

(*i*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the i^{th} sample; or,

(*ii*) The lower 90 percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.90}(\frac{s}{\sqrt{n}})$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.90}$ is the t statistic for a 90% one-tailed confidence interval with n–1 degrees of freedom (from Appendix D).

(*3*) The represented value of cooling capacity is the mean of the capacities measured for the sample, rounded:

(*i*) To the nearest 100 Btu/h if cooling capacity is less than 20,000 Btu/h,

(*ii*) To the nearest 200 Btu/h if cooling capacity is greater than or equal to 20,000 Btu/h but less than 38,000 Btu/h, and

(*iii*) To the nearest 500 Btu/h if cooling capacity is greater than or equal to 38,000 Btu/h and less than 65,000 Btu/h.

(*4*) The represented value of heating capacity is the mean of the capacities measured for the sample, rounded:

(*i*) To the nearest 100 Btu/h if heating capacity is less than 20,000 Btu/h,

(*ii*) To the nearest 200 Btu/h if heating capacity is greater than or equal to 20,000 Btu/h but less than 38,000 Btu/h, and

(*iii*) To the nearest 500 Btu/h if heating capacity is greater than or equal to 38,000 Btu/h and less than 65,000 Btu/h.

(*5*) The represented value of sensible heat ratio (SHR) is the mean of the SHR measured for the sample, rounded to the nearest percent (%).

(B) For heat pumps (other than heating-only heat pumps), all units of the sample population must be tested in both the cooling and heating modes and the results used for determining all representations.

(C) Determine the represented value of estimated annual operating cost for cooling-only units or the cooling portion of the estimated annual operating cost for air-source heat pumps that provide both heating and cooling by calculating the product of:

(*1*) The quotient of the represented value of cooling capacity, in Btu's per hour as determined in paragraph (a)(1)(iii)(A)(*3*) of this section, divided by the represented value of SEER, in Btu's per watt-hour, as determined in paragraph (a)(1)(iii)(A)(*2*) of this section;

(*2*) The representative average use cycle for cooling of 1,000 hours per year;

(*3*) A conversion factor of 0.001 kilowatt per watt; and

(*4*) The representative average unit cost of electricity in dollars per kilowatt-hour as provided pursuant to section 323(b)(2) of the Act.

(D) Determine the represented value of estimated annual operating cost for air-source heat pumps that provide only heating or for the heating portion of the estimated annual operating cost for air-source heat pumps that provide both heating and cooling, as follows:

(*1*) When using appendix M to subpart B of part 430, the product of:

(*i*) The quotient of the mean of the standardized design heating requirement for the sample, in Btu's per hour, nearest to the Region IV minimum design heating requirement, determined for each unit in the sample in section 4.2 of appendix M to subpart B of part 430, divided by the represented value of heating seasonal performance factor (HSPF), in Btu's per watt-hour, calculated for Region IV corresponding to the above-mentioned standardized design heating requirement, as determined in paragraph (a)(1)(iii)(A)(*2*) of this section;

(*ii*) The representative average use cycle for heating of 2,080 hours per year;

(*iii*) The adjustment factor of 0.77, which serves to adjust the calculated design heating requirement and heating load hours to the actual load experienced by a heating system;

(*iv*) A conversion factor of 0.001 kilowatt per watt; and

(*v*) The representative average unit cost of electricity in dollars per kilowatt-hour as provided pursuant to section 323(b)(2) of the Act; and

(*2*) When using appendix M1 to subpart B of part 430, the product of:

(*i*) The quotient of the represented value of cooling capacity (for air-source heat pumps that provide both cooling and heating) in Btu's per hour, as determined in paragraph (a)(1)(iii)(A)(*3*) of this section, or the represented value of heating capacity (for air-source heat pumps that provide only heating), as determined in paragraph (a)(1)(iii)(A)(*4*) of this section, divided by the represented value of heating seasonal performance factor (HSPF), in Btu's per watt-hour, calculated for Region IV, as determined in paragraph (a)(1)(iii)(A)(*2*) of this section;

(*ii*) The representative average use cycle for heating of 1,572 hours per year;

(*iii*) The adjustment factor of 1.30, which serves to adjust the calculated design heating requirement and heating load hours to the actual load experienced by a heating system;

(*iv*) A conversion factor of 0.001 kilowatt per watt; and

(*v*) The representative average unit cost of electricity in dollars per kilowatt-hour as provided pursuant to section 323(b)(2) of the Act;

(E) Determine the represented value of estimated annual operating cost for air-source heat pumps that provide both heating and cooling by calculating the sum of the quantity determined in paragraph (a)(1)(iii)(C) of this section added to the quantity determined in paragraph (a)(1)(iii)(D) of this section.

(F) Determine the represented value of estimated regional annual operating cost for cooling-only units or the cooling portion of the estimated regional annual operating cost for air-source heat pumps that provide both heating and cooling by calculating the product of:

(*1*) The quotient of the represented value of cooling capacity, in Btu's per hour, determined in paragraph (a)(1)(iii)(A)(*3*) of this section divided by the represented value of SEER, in Btu's per watt-hour, determined in paragraph (a)(1)(iii)(A)(*2*) of this section;

(*2*) The estimated number of regional cooling load hours per year determined from Table 21 in section 4.3.2 of appendix M or Table 20 in section 4.3.2 of appendix M1, as applicable, to subpart B of part 430;

(*3*) A conversion factor of 0.001 kilowatts per watt; and

(*4*) The representative average unit cost of electricity in dollars per kilowatt-hour as provided pursuant to section 323(b)(2) of the Act.

(G) Determine the represented value of estimated regional annual operating cost for air-source heat pumps that provide only heating or for the heating portion of the estimated regional annual operating cost for air-source heat pumps that provide both heating and cooling as follows:

(*1*) When using Appendix M to subpart B of Part 430, the product of:

(*i*) The estimated number of regional heating load hours per year determined from Table 21 in section 4.3.2 of appendix M to subpart B of part 430;

(*ii*) The quotient of the mean of the standardized design heating requirement for the sample, in Btu's per hour, for the appropriate generalized climatic region of interest (*i.e.,* corresponding to the regional heating load hours from ''A'') and determined for each unit in the sample in section 4.2 of appendix M to subpart B of Part 430, divided by the represented value of HSPF, in Btu's per watt-hour, calculated for the appropriate generalized climatic region of interest and corresponding to the above-mentioned standardized design heating requirement, and determined in paragraph (a)(1)(iii)(A)(*2*);

(*iii*) The adjustment factor of 0.77; which serves to adjust the calculated design heating requirement and heating load hours to the actual load experienced by a heating system;

(*iv*) A conversion factor of 0.001 kilowatts per watt; and

(*v*) The representative average unit cost of electricity in dollars per kilowatt-hour as provided pursuant to section 323(b)(2) of the Act; and

(*2*) When using Appendix M1 to subpart B of Part 430, the product of:

(*i*) The estimated number of regional heating load hours per year determined from Table 20 in section 4.2 of appendix M1 to subpart B of Part 430;

(*ii*) The quotient of the represented value of cooling capacity (for air-source heat pumps that provide both cooling and heating) in Btu's per hour, as determined in section (a)(1)(iii)(A)(*3*), or the represented value of heating capacity (for air-source heat pumps that provide only heating), as determined in section (a)(1)(iii)(A)(*4*), divided by the represented value of HSPF, in Btu's per watt-hour, calculated for the appropriate generalized climatic region of interest, and determined in (a)(1)(iii)(A)(*2);*

(*iii*) The adjustment factor of 1.30, which serves to adjust the calculated design heating requirement and heating load hours to the actual load experienced by a heating system;

(*iv*) A conversion factor of 0.001 kilowatts per watt; and

(*v*) The representative average unit cost of electricity in dollars per kilowatt-hour as provided pursuant to section 323(b)(2) of the Act.

(H) For air-source heat pumps that provide both heating and cooling, the estimated regional annual operating cost is the sum of the quantity determined in paragraph (a)(1)(iii)(F) of this section added to the quantity determined in paragraph (a)(1)(iii)(G) of this section.

(I) The cooling mode efficiency measure for cooling-only units and for air-source heat pumps that provide cooling is the represented value of the SEER, in Btu's per watt-hour, pursuant to paragraph (a)(1)(iii)(A)(*2*) of this section.

(J) The heating mode efficiency measure for air-source heat pumps is the represented value of the HSPF, in Btu's per watt-hour for each applicable standardized design heating requirement within each climatic region, pursuant to paragraph (a)(1)(iii)(A)(*2*) of this section.

(K) Round represented values of estimated annual operating cost to the nearest dollar per year. Round represented values of EER, SEER, HSPF, and APF to the nearest 0.05. Round represented values of off-mode power consumption, pursuant to paragraph (a)(1)(iii)(A)(*1)* to the nearest watt.

(2) *Units not required to be tested.*

(i) *For basic models rated by ICMs and single-split-system air conditioners, split-system heat pumps, space-constrained split-system heat pumps, and space-constrained split-system air conditioners.* For every individual combination within a basic model other than the individual combination required to be tested pursuant to paragraph (a)(1)(ii) of this section, either:

(A) A sample of sufficient size, comprised of production units or representing production units, must be tested as complete systems with the resulting ratings for the combination obtained in accordance with paragraphs (a)(1)(i) and (iii) of this section; or

(B) The representative values of the measures of energy efficiency must be assigned through the application of an AEDM in accordance with paragraph (a)(3) of this section and § 429.70. An AEDM may only be used to rate individual combinations in a basic model other than the combination required for mandatory testing under paragraph (a)(1)(ii) of this section. No basic model may be rated with an AEDM.

(ii) *For multi-split systems, multi-circuit systems, and single-zone-multiple-coil systems.* The following applies:

(A) For basic models composed of both non-ducted and short-ducted units, the represented value for the mixed non-ducted/short-ducted combination is the mean of the represented values for the non-ducted and short-ducted combinations as determined in accordance with paragraph (a)(1)(iii)(A) of this section.

(B) All other individual combinations of models of indoor units for the same model of outdoor unit for which the manufacturer chooses to make representations must be rated as a different basic model, and the provisions of (a)(1)(i) through (a)(1)(iii) and (a)(2)(ii)(A) of this section apply.

(3) *Alternative efficiency determination methods.* In lieu of testing, represented values of efficiency or consumption may be determined through the application of an AEDM pursuant to the requirements of § 429.70 and the provisions of this section.

(i) *Power or energy consumption.* Any represented value of the average off mode power consumption or other measure of energy consumption of an individual combination for which consumers would favor lower values must be greater than or equal to the output of the AEDM.

(ii) *Energy efficiency.* Any represented value of the SEER, EER, HSPF or other measure of energy efficiency of an individual combination for which consumers would favor higher values must be less than or equal to the output of the AEDM.

(b) *Limitations.* The following section explains the limitations for certification of models.

(1) *Regional.* Any model of outdoor unit that is certified in a combination that does not meet all regional standards cannot also be certified in a combination that meets the regional standard(s). Outdoor unit model numbers cannot span regions unless the model of outdoor unit is compliant with all standards in all possible combinations. If a model of outdoor unit is certified below a regional standard, then it must have a unique individual model number for distribution in each region.

(2) *Multiple product classes.* Models of outdoor units that are rated and distributed in combinations that span multiple product classes must be tested and certified pursuant to paragraph (a) as compliant with the applicable standard for each product class.

(c) *Certification reports.* This paragraph specifies the information that must be included in a certification report.

(1) *General.* The requirements of § 429.12 apply to central air conditioners and heat pumps.

(2) *Public product-specific information.* Pursuant to § 429.12(b)(13), for each basic model (for single-package systems) or individual combination (for split-systems), a certification report

must include the following public product-specific information: The seasonal energy efficiency ratio (SEER in British thermal units per Watt-hour (Btu/W-h)); the average off mode power consumption ($P_{W,OFF}$ in Watts); the cooling capacity in British thermal units per hour (Btu/h); the sensible heat ratio calculated based on full-load cooling conditions at the outdoor ambient conditions of 82 °F dry bulb and 65 °F wet bulb; and

(i) For heat pumps, the heating seasonal performance factor (HSPF in British thermal units per Watt-hour (Btu/W-h));

(ii) For air conditioners (excluding space constrained), the energy efficiency ratio (EER in British thermal units per Watt-hour (Btu/W-h));

(iii) For single-split-system equipment, whether the rating is for a coil-only or blower coil system; and

(iv) For multi-split, multiple-circuit, and single-zone-multiple-coil systems (including VRF), whether the rating is for a non-ducted, short-ducted, SDHV, or mixed non-ducted and short-ducted system.

(3) *Basic and individual model numbers.* The basic model number and individual model number(s) required to be reported under § 429.12(b)(6) must consist of the following:

Equipment type	Basic model No.	Individual model No(s).		
		1	2	3
Single Package	Number unique to the basic model.	Package	N/A	N/A.
Split System (rated by OUM).	Number unique to the basic model.	Outdoor Unit	Indoor Unit(s)	Air Mover (or N/A if rating coil-only system or fan is part of indoor unit model number).
Outdoor Unit Only	Number unique to the basic model.	Outdoor Unit	N/A	N/A.
Split-System or SDHV (rated by ICM).	Number unique to the basic model.	Outdoor Unit	Indoor Unit(s)	N/A.

(4) *Additional product-specific information.* Pursuant to § 429.12(b)(13), for each individual model/combination, a certification report must include the following additional product-specific information: The cooling full load air volume rate for the system or for each indoor unit as applicable (in cubic feet per minute (cfm)); the air volume rates for other test conditions including minimum cooling air volume rate, intermediate cooling air volume rate, full load heating air volume rate, minimum heating air volume rate, intermediate heating air volume rate, and nominal heating air volume rate (cfm) for the system or for each indoor unit as applicable, if different from the cooling full load air volume rate; whether the individual model uses a fixed orifice, thermostatic expansion valve, electronic expansion valve, or other type of metering device; the duration of the compressor break-in period, if used; the C_D^c value used to represent cooling mode cycling losses; the temperatures at which the crankcase heater with controls is designed to turn on and designed to turn off for the heating season, if applicable; the duration of the crankcase heater time delay for the shoulder season and heating season, if such time delay is employed; the maximum time between defrosts as allowed by the controls (in hours); whether an inlet plenum was installed during testing; and

(i) For heat pumps, the C_D^h value used;

(ii) For multi-split, multiple-circuit, and single-zone-multiple-coil systems, the number of indoor units tested with the outdoor unit; the nominal cooling capacity of each indoor unit and outdoor unit in the combination; and the indoor units that are not providing heating or cooling for part-load tests;

(iii) For ducted systems having multiple indoor fans within a single indoor unit, the number of indoor fans; the nominal cooling capacity of the indoor unit and outdoor unit; which fan(s) are operating to attain the full-load air volume rate when controls limit the simultaneous operation of all fans within the single indoor unit; and the allocation of the full-load air volume rate to each operational fan when different capacity blowers are connected to the common duct;

(iv) For models tested with an indoor blower installed, the airflow-control settings associated with full load cooling operation; and the airflow-control settings or alternative instructions for setting fan speed to the speed upon which the rating is based;

(v) For models with time-adaptive defrost control, the frosting interval to be used during Frost Accumulation tests and the procedure for manually initiating the defrost at the specified time;

(vi) For models of indoor units designed for both horizontal and vertical installation or for both up-flow and down-flow vertical installations, the orientation used for testing;

(vii) For variable speed units, the compressor frequency set points, and the required dip switch/control settings for step or variable components; and

(viii) For variable speed heat pumps, whether the unit controls restrict use of minimum compressor speed operation for some range of operating ambient conditions, whether the unit controls restrict use of maximum compressor speed operation for any ambient temperatures below 17 °F, and whether the optional $H4_2$ low temperature test was used to characterize performance at temperatures below 17 °F.

(d) *Alternative efficiency determination methods.* Alternative methods for determining efficiency or energy use for central air conditioners and heat pumps can be found in § 429.70(e) of this subpart.

■ 4. Amend § 429.70 by revising paragraph (e) to read as follows:

§ 429.70 Alternative methods for determining energy efficiency or energy use.

* * * * *

(e) *Alternate Efficiency Determination Method (AEDM) for central air conditioners and heat pumps.* This paragraph sets forth the requirements for a manufacturer to use an AEDM to rate central air conditioners and heat pumps

(1) *Criteria an AEDM must satisfy.* A manufacturer may not apply an AEDM to an individual combination to determine its certified ratings (SEER, EER, HSPF, and/or $P_{W,OFF}$) pursuant to this section unless authorized pursuant to § 429.16(a)(2) and:

(i) The AEDM is derived from a mathematical model that estimates the energy efficiency or energy consumption characteristics of the individual combination (SEER, EER, HSPF, and/or $P_{W,OFF}$) as measured by the applicable DOE test procedure; and

(ii) The manufacturer has validated the AEDM in accordance with paragraph (e)(2) of this section and using individual combinations that meet the current Federal energy conservation standards.

(2) *Validation of an AEDM.* Before using an AEDM, the manufacturer must validate the AEDM's accuracy and reliability as follows:

(i) The manufacturer must complete testing of each basic model as required under § 429.16(a)(1)(ii). Using the AEDM, calculate the energy use or efficiency for each of the tested individual combinations within each basic model. Compare the rating based on testing and the AEDM energy use or efficiency output according to paragraph (e)(2)(ii) of this section. The manufacturer is responsible for ensuring the accuracy and reliability of the AEDM.

(ii) *Individual combination tolerances.* This paragraph provides the tolerances applicable to individual combinations rated using an AEDM.

(A) For an energy-efficiency metric, the predicted efficiency for each individual combination calculated by applying the AEDM may not be more than three percent greater than the efficiency determined from the corresponding test of the combination.

(B) For an energy-consumption metric, the predicted energy consumption for each individual combination, calculated by applying the AEDM, may not be more than three percent less than the energy consumption determined from the corresponding test of the combination.

(C) The predicted energy efficiency or consumption for each individual combination calculated by applying the AEDM must meet or exceed the applicable federal energy conservation standard.

(iii) *Additional test unit requirements.* Each test must have been performed in accordance with the DOE test procedure applicable at the time the individual combination being rated with the AEDM is distributed in commerce.

(3) *AEDM records retention requirements.* If a manufacturer has used an AEDM to determine representative values pursuant to this section, the manufacturer must have available upon request for inspection by the Department records showing:

(i) The AEDM, including the mathematical model, the engineering or statistical analysis, and/or computer simulation or modeling that is the basis of the AEDM;

(ii) Product information, complete test data, AEDM calculations, and the statistical comparisons from the units tested that were used to validate the AEDM pursuant to paragraph (e)(2) of this section; and

(iii) Product information and AEDM calculations for each individual combination certified using the AEDM.

(4) *Additional AEDM requirements.* If requested by the Department and at DOE's discretion, the manufacturer must perform at least one of the following:

(i) Conduct simulations before representatives of the Department to predict the performance of particular individual combinations; or

(ii) Provide analyses of previous simulations conducted by the manufacturer; or

(iii) Conduct certification testing of individual combinations selected by the Department.

(5) *AEDM verification testing.* DOE may use the test data for a given individual combination generated pursuant to § 429.104 to verify the certified rating determined by an AEDM as long as the following process is followed:

(i) *Selection of units.* DOE will obtain one or more units for test from retail, if available. If units cannot be obtained from retail, DOE will request that a unit be provided by the manufacturer;

(ii) *Lab requirements.* DOE will conduct testing at an independent, third-party testing facility of its choosing. In cases where no third-party laboratory is capable of testing the equipment, testing may be conducted at a manufacturer's facility upon DOE's request.

(iii) *Testing.* At no time during verification testing may the lab and the manufacturer communicate without DOE authorization. If during test set-up or testing, the lab indicates to DOE that it needs additional information regarding a given individual combination in order to test in accordance with the applicable DOE test procedure, DOE may organize a meeting between DOE, the manufacturer and the lab to provide such information.

(iv) *Failure to meet certified rating.* If an individual combination tests worse than its certified rating (*i.e.,* lower than the certified efficiency rating or higher than the certified consumption rating) by more than 5%, or the test results in a different cooling capacity than its certified cooling capacity by more than 5%, DOE will notify the manufacturer. DOE will provide the manufacturer with all documentation related to the test set up, test conditions, and test results for the unit. Within the timeframe allotted by DOE, the manufacturer:

(A) May present any and all claims regarding testing validity; and

(B) If not on site for the initial test set-up, must test at least one additional unit of the same combination obtained from a retail source at its own expense, following the test requirements in § 429.110(a)(3). When testing at an independent lab, the manufacturer may choose to have DOE and the manufacturer present.

(v) *Tolerances.* This subparagraph specifies the tolerances DOE will permit when conducting verification testing.

(A) For consumption metrics, the result from a DOE verification test must be less than or equal to 1.05 multiplied by the certified rating.

(B) For efficiency metrics, the result from a DOE verification test must be greater than or equal to 1.05 multiplied by the certified rating.

(vi) *Invalid rating.* If, following discussions with the manufacturer and a retest where applicable, DOE determines that the verification testing was conducted appropriately in accordance with the DOE test procedure, DOE will issue a determination that the ratings for the basic model are invalid. The manufacturer must conduct additional testing and re-rate and re-certify the individual combinations within the basic model that were rated using the AEDM based on all test data collected, including DOE's test data.

(vii) *AEDM use.* This subparagraph specifies when a manufacturer's use of an AEDM may be restricted due to prior invalid ratings.

(A) If DOE has determined that a manufacturer made invalid ratings on individual combinations within two or more basic models rated using the manufacturer's AEDM within a 24 month period, the manufacturer must test the least efficient and most efficient combination within each basic model in addition to the combination specified in § 429.16(a)(1)(ii). The twenty-four month period begins with a DOE determination that a rating is invalid through the process outlined above.

(B) If DOE has determined that a manufacturer made invalid ratings on more than four basic models rated using the manufacturer's AEDM within a 24-month period, the manufacturer may no longer use an AEDM.

(C) If a manufacturer has lost the privilege of using an AEDM, the manufacturer may regain the ability to use an AEDM by:

(*1*) Investigating and identifying cause(s) for failures;

(*2*) Taking corrective action to address cause(s);

(*3*) Performing six new tests per basic model, a minimum of two of which must be performed by an independent, third-party laboratory from units obtained from retail to validate the AEDM; and

(*4*) Obtaining DOE authorization to resume use of an AEDM.

* * * * *

■ 5. Amend § 429.134 by adding paragraph (g) to read as follows:

§ 429.134 Product-specific enforcement provisions.

* * * * *

(g) *Central air conditioners and heat pumps.*—(1) *Verification of cooling capacity.* The cooling capacity of each tested unit of the basic model (for single package systems) or individual combination (for split-systems) will be measured pursuant to the test requirements of § 430.23(m). The results of the measurement(s) will be compared to the value of cooling capacity certified by the manufacturer.

(i) If the measurement(s) (either the measured cooling capacity for a single unit sample or the average of the measured cooling capacities for a multiple unit sample) is less than or equal to 1.05 multiplied by the certified cooling capacity and greater than or equal to 0.95 multiplied by the certified cooling capacity, the certified cooling capacity will be used as the basis for determining SEER.

(ii) Otherwise, the measurement(s) (either the measured cooling capacity for a single unit sample or the average of the measured cooling capacities for a multiple unit sample, as applicable) will be used as the basis for determining SEER.

(2) *Verification of C_D value*—(i) For central air conditioners and heat pumps other than models of outdoor units with no match, the C_D^c and/or C_D^h value of the basic model (for single package systems) or individual combination (for split-systems), as applicable, will be measured pursuant to the test requirements of § 430.23(m) for each unit tested. The results of the measurement(s) for each C_D^c or C_D^h value will be compared to the C_D^c or C_D^h value certified by the manufacturer.

(A) If the results of the measurement(s) (either the measured value for a single unit sample or the average of the measured values for a multiple unit sample) is 0.02 or more greater than the certified C_D^c or C_D^h value, the average measured C_D^c or C_D^h value will serve as the basis for calculation of SEER or HSPF for the basic model/ individual combination.

(B) For all other cases, the certified C_D^c or C_D^h value will be used as the basis for calculation of SEER or HSPF for the basic model/individual combination.

(ii) For models of outdoor units with no match, or for tests in which the criteria for the cyclic test in 10 CFR part 430, subpart B, Appendix M or M1, as applicable, section 3.5e, cannot be achieved, DOE will use the default C_D^c and/or C_D^h value pursuant to 10 CFR part 430.

PART 430—ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS

■ 6. The authority citation for part 430 continues to read as follows:

Authority: 42 U.S.C. 6291–6309; 28 U.S.C. 2461 note.

■ 7. Section 430.2 is amended by:

■ a. Removing the definitions of ''ARM/ simulation adjustment factor,'' ''coil family,'' ''condenser-evaporator coil combination'', ''condensing unit,'' ''evaporator coil'', ''heat pump,'' ''indoor unit,'' ''outdoor unit,'' ''small duct, high velocity system,'' and ''tested combination;'' and

■ b. Revising the definitions of ''basic model;'' and ''central air conditioner'' to read as follows:

§ 430.2 Definitions.

* * * * *

Basic model means all units of a given type of covered product (or class thereof) manufactured by one manufacturer; having the same primary energy source; and, which have essentially identical electrical, physical, and functional (or hydraulic) characteristics that affect energy consumption, energy efficiency, water consumption, or water efficiency; and

(1) With respect to general service fluorescent lamps, general service incandescent lamps, and incandescent reflector lamps: Lamps that have essentially identical light output and electrical characteristics—including lumens per watt (lm/W) and color rendering index (CRI).

(2) With respect to faucets and showerheads: Have the identical flow control mechanism attached to or installed within the fixture fittings, or the identical water-passage design features that use the same path of water in the highest flow mode.

(3) With respect to furnace fans: Are marketed and/or designed to be installed in the same type of installation; and

(4) With respect to central air conditioners and central air conditioning heat pumps:

(i) Essentially identical electrical, physical, and functional (or hydraulic) characteristics means:

(A) For split-systems manufactured by independent coil manufacturers (ICMs) and for small-duct, high velocity systems: All individual combinations having the same model of indoor unit, which means the same or comparably performing indoor coil(s) [same face area; fin material, depth, style (*e.g.,* wavy, louvered), and density (fins per inch); tube pattern, material, diameter, wall thickness, and internal enhancement], indoor blower(s) [same air flow with the same indoor coil and external static pressure, same power input], auxiliary refrigeration system components if present (*e.g.,* expansion valve), and controls.

(B) for split-systems manufactured by outdoor unit manufacturers (OUMs): All individual combinations having the same model of outdoor unit, which means the same or comparably performing compressor(s) [same displacement rate (volume per time) and same capacity and power input when tested under the same operating conditions], outdoor coil(s) [same face area; fin material, depth, style (*e.g.,* wavy, louvered), and density (fins per inch); tube pattern, material, diameter, wall thickness, and internal enhancement], outdoor fan(s) [same air flow with the same outdoor coil, same power input], auxiliary refrigeration system components if present (*e.g.,* suction accumulator, reversing valve, expansion valve), and controls.

(C) for single-package models: All individual models having the same or comparably performing compressor(s) [same displacement rate (volume per time) and same capacity and power input when tested under the same operating conditions], outdoor coil(s) and indoor coil(s) [same face area; fin material, depth, style (*e.g.,* wavy, louvered), and density (fins per inch); tube pattern, material, diameter, wall thickness, and internal enhancement], outdoor fan(s) [same air flow with the same outdoor coil, same power input], indoor blower(s) [same air flow with the same indoor coil and external static pressure, same power input], auxiliary refrigeration system components if present (*e.g.* suction accumulator, reversing valve, expansion valve), and controls.

(ii) For single-split-system and single-package models, manufacturers may instead choose to make each individual combination or model its own basic model provided the testing and rating requirements in 10 CFR 429.16 are met.

(iii) For multi-split, multi-circuit, and single-zone-multiple-coil models, a basic model may not include both individual SDHV combinations and non-SDHV combinations even when they include the same model of outdoor unit. The manufacturer may choose to identify specific individual combinations as additional basic models.

* * * * *

Central air conditioner or central air conditioning heat pump means a product, other than a packaged terminal air conditioner or packaged terminal heat pump, which is powered by single phase electric current, air cooled, rated below 65,000 Btu per hour, not contained within the same cabinet as a furnace, the rated capacity of which is above 225,000 Btu per hour, and is a heat pump or a cooling unit only. A central air conditioner or central air conditioning heat pump may consist of: A single-package unit; an outdoor unit and one or more indoor units; an indoor unit only; or an outdoor unit only. In the case of an indoor unit only or an outdoor unity only, the unit must be tested and rated as a system (combination of both an indoor and an outdoor unit). For all central air conditioner and central air conditioning heat pump-related definitions, see appendices M or M1 of subpart B of this part.

■ 8. Section 430.3 is amended by:

■ a. Revising paragraphs (c)(1) and (g)(2);

■ b. Adding paragraphs (c)(3) and (c)(4);

■ c. Removing paragraphs (g)(3);

■ d. Redesignating paragraphs (g)(4) through (g)(14) as (g)(3) through (g)(13); and

■ e. Revising newly redesignated (g)(3) through (g)(9).

The revisions and additions read as follows:

§ 430.3 Materials incorporated by reference.

* * * * *

(c) * * *

(1) AHRI 210/240–2008 with Addendums 1 and 2 (formerly ARI Standard 210/240), Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment, sections 6.1.3.2, 6.1.3.4, 6.1.3.5 and figures D1, D2, D4, approved by ANSI December, 2012, IBR approved for appendix M and M1 to subpart B.

* * * * *

(3) ANSI/AHRI 1230–2010 with Addendum 2, Performance Rating of Variable Refrigerant Flow Multi-Split Air-Conditioning and Heat Pump Equipment, sections 3 (except 3.8, 3.9, 3.13, 3.14, 3.15, 3.16, 3.23, 3.24, 3.26, 3.27, 3.28, 3.29, 3.30, and 3.31), 5.1.3, 5.1.4, 6.1.5 (except Table 8), 6.1.6, and 6.2, approved August 2, 2010, Addendum 2 dated June 2014, IBR approved for appendices M and M1 to subpart B.

(4) AHRI 210/240-Draft, Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment, appendix E, section E4, Docket No. EERE–2009–BT–TP–0004 No. 45.

* * * * *

(g) * * *

(2) ASHRAE 23.1–2010, Methods of Testing for Rating the Performance of Positive Displacement Refrigerant Compressors and Condensing Units that Operate at Subcritical Temperatures of the Refrigerant, sections 5, 6, 7, and 8 only, approved January 28, 2010, IBR approved for appendices M and M1 to subpart B.

(3) ASHRAE 37–2009, Methods of Testing for Rating Electrically Driven Unitary Air-Conditioning and Heat Pump Equipment, approved June 25, 2009, IBR approved for appendix AA subpart to B. Sections 5.1.1, 5.2, 5.5.1, 6.1.1, 6.1.2, 6.1.4, 6.4, 6.5, 7.3, 7.4, 7.5, 7.7.2.1, 7.7.2.2, 8.1.2, 8.1.3, 8.2, 8.6.2; figures 1, 2, 4, 7a, 7b, 7c, 8; and table 3 only IBR approved for appendices M and M1 to subpart B.

* * * * *

(4) ASHRAE 41.1–1986 (Reaffirmed 2006), Standard Method for Temperature Measurement, approved February 18, 1987, IBR approved for appendices E and AA to subpart B.

(5) ASHRAE 41.1–2013, Standard Method for Temperature Measurement, approved January 30, 2013, IBR approved for appendix X1 to subpart B. Sections 4, 5, 6, 7.2, and 7.3 only, IBR approved for appendices M and M1 to subpart B.

(6) ASHRAE 41.2–1987 (Reaffirmed 1992), Standard Methods for Laboratory Airflow Measurement, section 5.2.2 and figure 14, approved October 1, 1987, IBR approved for appendices M and M1 to subpart B.

(7) ASHRAE 41.6–2014, Standard Method for Humidity Measurement, sections 4, 5, 6, and 7.1, approved July 3, 2014, sections 4, 5, 6, and 7 only IBR approved for appendices M and M1 to subpart B.

(8) ASHRAE 41.9–2011, Standard Methods for Volatile-Refrigerant Mass Flow Measurements Using Calorimeters, approved February 3, 2011, sections 5, 6, 7, 8, 9, and 11 only IBR approved for appendices M and M1 to subpart B.

(9) ASHRAE/AMCA 51–07/210–07, Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating, figures 2A and 12, approved August 17, 2007, IBR approved for appendices M and M1 to subpart B.

* * * * *

■ 9. Section 430.23 is amended by revising paragraph (m) to read as follows:

§ 430.23 Test procedures for the measurement of energy and water consumption.

* * * * *

(m) *Central air conditioners and heat pumps.* See the note at the beginning of appendix M and M1 to determine the appropriate test method. All values discussed in this section must be determined using a single appendix.

(1) Cooling capacity must be determined from the steady-state wet-coil test (A or A2 Test), as described in section 3.2 of appendix M or M1 to this subpart, and rounded off to the nearest (i) to the nearest 50 Btu/h if cooling capacity is less than 20,000 Btu/h, (ii) to the nearest 100 Btu/h if cooling capacity is greater than or equal to 20,000 Btu/h but less than 38,000 Btu/h, and (iii) to the nearest 250 Btu/h if cooling capacity is greater than or equal to 38,000 Btu/h and less than 65,000 Btu/h.

(2) Seasonal energy efficiency ratio (SEER) must be determined from section 4.1 of appendix M or M1 to this subpart, and rounded off to the nearest 0.025 Btu/W-h.

(3) When representations are made of energy efficiency ratio (EER), EER must be determined in section 4.7 of appendix M or M1 to this subpart, and rounded off to the nearest 0.025 Btu/W-h.

(4) Heating seasonal performance factors (HSPF) must be determined in section 4.2 of appendix M or M1 to this subpart, and rounded off to the nearest 0.025 Btu/W-h.

(5) Average off mode power consumption must be determined according to section 4.3 of appendix M or M1 to this subpart, and rounded off to the nearest 0.5 W.

(6) Sensible heat ratio (SHR) must be determined according to section 4.6 of appendix M or M1 to this subpart, and rounded off to the nearest 0.5 percent (%).

(7) All other measures of energy efficiency or consumption or other useful measures of performance must be determined using appendix M or M1 of this subpart.

* * * * *

■ 10. Revise appendix M to subpart B of part 430 to read as follows:

APPENDIX M TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF CENTRAL AIR CONDITIONERS AND HEAT PUMPS

Note: Prior to May 9, 2016, any representations, including compliance certifications, made with respect to the energy use, power, or efficiency of central air conditioners and central air conditioning heat pumps must be based on the results of testing pursuant to either this appendix or the procedures in Appendix M as it appeared at 10 CFR part 430, subpart B, Appendix M, in the 10 CFR parts 200 to 499 edition revised as of January 1, 2015. Any representations made with respect to the energy use or efficiency of such central air conditioners and central air conditioning heat pumps must be in accordance with whichever version is selected.

On or after May 9, 2016 and prior to the compliance date for any amended energy conservation standards, any representations, including compliance certifications, made with respect to the energy use, power, or efficiency of central air conditioners and central air conditioning heat pumps must be based on the results of testing pursuant to this appendix.

On or after the compliance date for any amended energy conservation standards, any representations, including compliance certifications, made with respect to the energy use, power, or efficiency of central air conditioners and central air conditioning heat pumps must be based on the results of testing pursuant to appendix M1 of this subpart.

1. Scope and Definitions

1.1 Scope.

This test procedure provides a method of determining SEER, EER, HSPF and $P_{W,OFF}$ for central air conditioners and central air conditioning heat pumps including the following categories:

(a) Split-system air conditioners; and single-zone-multiple-coil, multi-split (including VRF), and multi-circuit systems

(b) Split-system heat pumps and single-zone-multiple-coil, multi-split (including VRF), and multi-circuit systems

(c) Single-package air conditioners

(d) Single-package heat pumps

(e) Small-duct, high-velocity systems (including VRF)

(f) Space-constrained products—air conditioners

(g) Space-constrained products—heat pumps

For purposes of this appendix, the Department of Energy incorporates by reference specific sections of several industry standards, as listed in § 430.3. In cases where there is a conflict, the language of the test procedure in this appendix takes precedence over the incorporated standards.

All section references refer to sections within this appendix unless otherwise stated.

1.2 Definitions.

Airflow-control settings are programmed or wired control system configurations that control a fan to achieve discrete, differing ranges of airflow—often designated for performing a specific function (*e.g.,* cooling, heating, or constant circulation)—without manual adjustment other than interaction with a user-operable control (*i.e.,* a thermostat) that meets the manufacturer specifications for installed-use. For the purposes of this appendix, manufacturer specifications for installed-use are those found in the product literature shipped with the unit.

Airflow prevention device denotes a device(s) that prevents airflow via natural convection by mechanical means, such as an air damper box, or by means of changes in duct height, such as an upturned duct.

Annual performance factor means the total heating and cooling done by a heat pump in a particular region in one year divided by the total electric energy used in one year.

Blower coil indoor unit means the indoor unit of a split-system central air conditioner or heat pump that includes a refrigerant-to-air heat exchanger coil, may include a cooling-mode expansion device, and includes either an indoor blower housed with the coil or a separate designated air mover such as a furnace or a modular blower (as defined in Appendix AA to the subpart). *Blower coil system* refers to a split-system that includes one or more blower coil indoor units.

CFR means Code of Federal Regulations.

Coefficient of Performance (COP) means the ratio of the average rate of space heating delivered to the average rate of electrical energy consumed by the heat pump. These rate quantities must be determined from a single test or, if derived via interpolation, must be determined at a single set of operating conditions. COP is a dimensionless quantity. When determined for a ducted unit tested without an indoor blower installed, COP must include the section 3.7 and 3.9.1 default values for the heat output and power input of a fan motor.

Coil-only indoor unit means the indoor unit of a split-system central air conditioner or heat pump that includes a refrigerant-to-air heat exchanger coil and may include a cooling-mode expansion device, but does not include an indoor blower housed with the coil, and does not include a separate designated air mover such as a furnace or a modular blower (as defined in Appendix AA to this subpart. A coil-only indoor unit is designed to use a separately-installed furnace or a modular blower for indoor air movement. *Coil-only system* refers to a system that includes one or more coil-only indoor units.

Condensing unit removes the heat absorbed by the refrigerant to transfer it to the outside environment, and which consists of an outdoor coil, compressor(s), and air moving device.

Constant-air-volume-rate indoor blower means a fan that varies its operating speed to provide a fixed air-volume-rate from a ducted system.

Continuously recorded, when referring to a dry bulb measurement, dry bulb temperature used for test room control, wet bulb temperature, dew point temperature, or relative humidity measurements, means that the specified value must be sampled at regular intervals that are equal to or less than 5 seconds

Cooling load factor (CLF) means the ratio having as its numerator the total cooling delivered during a cyclic operating interval consisting of one ON period and one OFF period. The denominator is the total cooling that would be delivered, given the same ambient conditions, had the unit operated continuously at its steady-state, space-cooling capacity for the same total time (ON + OFF) interval.

Crankcase heater means any electrically powered device or mechanism for intentionally generating heat within and/or around the compressor sump volume often done to minimize the dilution of the compressor's refrigerant oil by condensed refrigerant. Crankcase heater control may be achieved using a timer or may be based on a change in temperature or some other measurable parameter, such that the crankcase heater is not required to operate continuously. A crankcase heater without controls operates continuously when the compressor is not operating.

Cyclic Test means a test where the unit's compressor is cycled on and off for specific time intervals. A cyclic test provides half the information needed to calculate a degradation coefficient.

Damper box means a short section of duct having an air damper that meets the performance requirements of section 2.5.7.

Degradation coefficient (C_D) means a parameter used in calculating the part load factor. The degradation coefficient for cooling is denoted by C_D^c. The degradation coefficient for heating is denoted by C_D^h.

Demand-defrost control system means a system that defrosts the heat pump outdoor coil only when measuring a predetermined degradation of performance. The heat pump's controls monitor one or more parameters that always vary with the amount of frost accumulated on the outdoor coil (*e.g.,* coil to air differential temperature, coil differential air pressure, outdoor fan power or current, optical sensors) at least once for every ten minutes of compressor ON-time when space heating. One acceptable alternative to the criterion given in the prior sentence is a feedback system that measures the length of the defrost period and adjusts defrost frequency accordingly. In all cases, when the frost parameter(s) reaches a predetermined value, the system initiates a defrost. In a demand-defrost control system, defrosts are terminated based on monitoring a parameter(s) that indicates that frost has been eliminated from the coil. (**Note:** Systems that vary defrost intervals according to outdoor dry-bulb temperature are not demand-defrost systems.) A demand-defrost control system, which otherwise meets the above requirements, may allow time-initiated defrosts if, and only if, such defrosts occur after 6 hours of compressor operating time.

Design heating requirement (DHR) predicts the space heating load of a residence when subjected to outdoor design conditions. Estimates for the minimum and maximum

DHR are provided for six generalized U.S. climatic regions in section 4.2.

Dry-coil tests are cooling mode tests where the wet-bulb temperature of the air supplied to the indoor coil is maintained low enough that no condensate forms on this coil.

Ducted system means an air conditioner or heat pump that is designed to be permanently installed equipment and delivers conditioned air to the indoor space through a duct(s). The air conditioner or heat pump may be either a split-system or a single-package unit.

Energy efficiency ratio (EER) means the ratio of the average rate of space cooling delivered to the average rate of electrical energy consumed by the air conditioner or heat pump. These rate quantities must be determined from a single test or, if derived via interpolation, must be determined at a single set of operating conditions. EER is expressed in units of

$$\frac{Btu/h}{W}.$$

When determined for a ducted unit tested without an indoor blower installed, EER must include the section 3.3 and 3.5.1 default values for the heat output and power input of a fan motor.

Evaporator coil absorbs heat from an enclosed space and transfers the heat to a refrigerant.

Heat pump means a kind of central air conditioner, which consists of one or more assemblies, utilizing an indoor conditioning coil, compressor, and refrigerant-to-outdoor air heat exchanger to provide air heating, and may also provide air cooling, air dehumidifying, air humidifying, air circulating, and air cleaning.

Heat pump having a heat comfort controller means equipment that regulates the operation of the electric resistance elements to assure that the air temperature leaving the indoor section does not fall below a specified temperature. This specified temperature is usually field adjustable. Heat pumps that actively regulate the rate of electric resistance heating when operating below the balance point (as the result of a second stage call from the thermostat) but do not operate to maintain a minimum delivery temperature are not considered as having a heat comfort controller.

Heating load factor (HLF) means the ratio having as its numerator the total heating delivered during a cyclic operating interval consisting of one ON period and one OFF period. The denominator is the total heating that would be delivered, given the same ambient conditions, if the unit operated continuously at its steady-state space heating capacity for the same total time (ON plus OFF) interval.

Heating season means the months of the year that require heating, *e.g.,* typically, and roughly, October through April.

Heating seasonal performance factor (HSPF) means the total space heating required during the space heating season, expressed in Btu's, divided by the total electrical energy consumed by the heat pump system during the same season, expressed in watt-hours. The HSPF used to evaluate compliance with the Energy Conservation Standards (see 10 CFR 430.32(c)) is based on Region IV, the minimum standardized design heating requirement, and the sampling plan stated in 10 CFR 429.16(a).

Independent coil manufacturer (ICM) means a manufacturer that manufactures indoor units but does not manufacture single-package units or outdoor units.

Indoor unit transfers heat between the refrigerant and the indoor air and consists of an indoor coil and casing and may include a cooling mode expansion device and/or an air moving device.

Multiple-circuit (or multi-circuit) system means a split system that has one outdoor unit and that has two or more indoor units installed on two or more refrigeration circuits such that each refrigeration circuit serves a compressor and one and only one indoor unit, and refrigerant is not shared from circuit to circuit.

Multiple-split (or multi-split) system means a split system that has one outdoor unit and two or more indoor coil-only or indoor blower coil units connected to its other component(s) with a single refrigerant circuit. The indoor units operate independently and can condition multiple zones in response to at least two indoor thermostats or temperature sensors. The outdoor unit operates in response to independent operation of the indoor units based on control input of multiple indoor thermostats or temperature sensors, and/or based on refrigeration circuit sensor input (*e.g.,* suction pressure).

*Nominal capacity means t*he capacity that is claimed by the manufacturer in the product name plate. Nominal cooling capacity is approximate to the air conditioner cooling capacity tested at A or A2 condition. Nominal heating capacity is approximate to the heat pump heating capacity tested in H12 test (or the optional H1N test).

Non-ducted system means a split-system central air conditioner or heat pump that is designed to be permanently installed and that directly heats or cools air within the conditioned space using one or more indoor units that are mounted on room walls and/or ceilings. The system may be of a modular design that allows for combining multiple outdoor coils and compressors to create one overall system.

Normalized Gross Indoor Fin Surface (NGIFS) means the gross fin surface area of the indoor unit coil divided by the cooling capacity measured for the A or A2 Test whichever applies.

Off-mode power consumption means the power consumption when the unit is connected to its main power source but is neither providing cooling nor heating to the building it serves.

Off-mode season means, for central air conditioners, the shoulder season and the entire heating season; and for heat pumps, the shoulder season only.

Outdoor unit transfers heat between the refrigerant and the outdoor air, and consists of an outdoor coil, compressor(s), an air moving device, and in addition for heat pumps, could include a heating mode expansion device, reversing valve, and defrost controls.

Outdoor unit manufacturer (OUM) means a manufacturer of single-package units, outdoor units, and/or both indoor units and outdoor units.

Part-load factor (PLF) means the ratio of the cyclic energy efficiency ratio (coefficient of performance) to the steady-state energy efficiency ratio (coefficient of performance), where both energy efficiency ratios (coefficients of performance) are determined based on operation at the same ambient conditions.

Seasonal energy efficiency ratio (SEER) means the total heat removed from the conditioned space during the annual cooling season, expressed in Btu's, divided by the total electrical energy consumed by the central air conditioner or heat pump during the same season, expressed in watt-hours.

Short ducted system means a ducted split system whose one or more indoor sections produce greater than zero but no greater than 0.1 inches (of water) of external static pressure when operated at the full-load air volume not exceeding 450 cfm per rated ton of cooling.

Shoulder season means the months of the year in between those months that require cooling and those months that require heating, *e.g.,* typically, and roughly, April through May, and September through October.

Single-package unit means any central air conditioner or heat pump that has all major assemblies enclosed in one cabinet.

Single-split-system means a split system that has one outdoor unit and that has one indoor coil-only or indoor blower coil unit connected to its other component(s) with a single refrigeration circuit.

Single-zone-multiple-coil split system means a split system that has one outdoor unit and that has two or more indoor units connected with a single refrigeration circuit. The indoor units operate in unison in response to a single indoor thermostat.

Small-duct, high-velocity system means a system that contains a blower and indoor coil combination that is designed for, and produces, at least 1.2 inches (of water) of external static pressure when operated at the full-load air volume rate of 220–350 cfm per rated ton of cooling. When applied in the field, uses high-velocity room outlets (*i.e.,* generally greater than 1000 fpm) having less than 6.0 square inches of free area.

Split system means any air conditioner or heat pump that has one or more of the major assemblies separated from the others. Split-systems may be either blower coil systems or coil-only systems.

Standard Air means dry air having a mass density of 0.075 lb/ft^3.

Steady-state test means a test where the test conditions are regulated to remain as constant as possible while the unit operates continuously in the same mode.

Temperature bin means the 5 °F increments that are used to partition the outdoor dry-bulb temperature ranges of the cooling (≥65 °F) and heating (<65 °F) seasons.

Test condition tolerance means the maximum permissible difference between the average value of the measured test parameter and the specified test condition.

Test operating tolerance means the maximum permissible range that a measurement may vary over the specified test interval. The difference between the maximum and minimum sampled values must be less than or equal to the specified test operating tolerance.

Tested combination means a single-zone-multiple-coil, multi-split, or multi-circuit system having the following features:

(1) The system consists of one outdoor unit with one or more compressors matched with between two and five indoor units;

(2) The indoor units shall:

(i) Collectively, have a nominal cooling capacity greater than or equal to 95 percent and less than or equal to 105 percent of the nominal cooling capacity of the outdoor unit;

(ii) Represent the highest sales volume model family that can meet the 95 percent nominal cooling capacity of the outdoor unit [**Note:** another indoor model family may be used if five indoor units from the highest sales volume model family do not provide sufficient capacity to meet the 95 percent threshold level].

(iii) Individually not have a nominal cooling capacity greater than 50 percent of the nominal cooling capacity of the outdoor unit, unless the nominal cooling capacity of the outdoor unit is 24,000 Btu/h or less;

(iv) Operate at fan speeds consistent with manufacturer's specifications; and

(v) All be subject to the same minimum external static pressure requirement while able to produce the same external static pressure at the exit of each outlet plenum when connected in a manifold configuration as required by the test procedure.

(vi) Where referenced, ''nominal cooling capacity'' is to be interpreted for indoor units as the highest cooling capacity listed in published product literature for 95 °F outdoor dry bulb temperature and 80 °F dry bulb, 67 °F wet bulb indoor conditions, and for outdoor units as the lowest cooling capacity listed in published product literature for these conditions. If incomplete or no operating conditions are reported, the highest (for indoor units) or lowest (for outdoor units) such cooing capacity shall be used.

Time-adaptive defrost control system is a demand-defrost control system that measures the length of the prior defrost period(s) and uses that information to automatically determine when to initiate the next defrost cycle.

Time-temperature defrost control systems initiate or evaluate initiating a defrost cycle only when a predetermined cumulative compressor ON-time is obtained. This predetermined ON-time is generally a fixed value (*e.g.,* 30, 45, 90 minutes) although it may vary based on the measured outdoor dry-bulb temperature. The ON-time counter accumulates if controller measurements (*e.g.,* outdoor temperature, evaporator temperature) indicate that frost formation conditions are present, and it is reset/remains at zero at all other times. In one application of the control scheme, a defrost is initiated whenever the counter time equals the predetermined ON-time. The counter is reset when the defrost cycle is completed.

In a second application of the control scheme, one or more parameters are measured (*e.g.,* air and/or refrigerant temperatures) at the predetermined, cumulative, compressor ON-time. A defrost is initiated only if the measured parameter(s) falls within a predetermined range. The ON-time counter is reset regardless of whether or not a defrost is initiated. If systems of this second type use cumulative ON-time intervals of 10 minutes or less, then the heat pump may qualify as having a demand defrost control system (see definition).

Triple-capacity, northern heat pump means a heat pump that provides two stages of cooling and three stages of heating. The two common stages for both the cooling and heating modes are the low capacity stage and the high capacity stage. The additional heating mode stage is the booster capacity stage, which offers the highest heating capacity output for a given set of ambient operating conditions.

Triple-split system means a central air conditioner or heat pump that is composed of three separate components: An outdoor fan coil section, an indoor blower coil section, and an indoor compressor section.

Two-capacity (or two-stage) compressor system means a central air conditioner or heat pump that has a compressor or a group of compressors operating with only two stages of capacity. For such systems, low capacity means the compressor(s) operating at low stage, or at low load test conditions. The low compressor stage for heating mode tests may be the same or different from the cooling mode value.

For such systems, high capacity means the compressor(s) operating at low stage, or at full load test conditions.

Two-capacity, northern heat pump means a heat pump that has a factory or field-selectable lock-out feature to prevent space cooling at high-capacity. Two-capacity heat pumps having this feature will typically have two sets of ratings, one with the feature disabled and one with the feature enabled. The certified indoor coil model number should reflect whether the ratings pertain to the lockout enabled option via the inclusion of an extra identifier, such as ''+LO''. When testing as a two-capacity, northern heat pump, the lockout feature must remain enabled for all tests.

Variable refrigerant flow (VRF) system means a multi-split system with at least three compressor capacity stages, distributing refrigerant through a piping network to multiple indoor blower coil units each capable of individual zone temperature control, through proprietary zone temperature control devices and a common communications network. Single-phase VRF systems less than 65,000 Btu/h are a kind of central air conditioners and central air conditioning heat pumps.

Variable-speed compressor system means a central air conditioner or heat pump that has a compressor that uses a variable-speed drive to vary the compressor speed to achieve variable capacities.

For such a system, maximum speed means the maximum operating speed, measured by RPM or frequency (Hz), that the unit is designed to operate in cooling mode or heating mode. Maximum speed does not change with ambient temperature, and it can be different from cooling mode to heating mode. Maximum speed does not necessarily mean maximum capacity.

For such systems, minimum speed means the minimum speed, measured by RPM or frequency (Hz), that the unit is designed to operate in cooling mode or heating mode. Minimum speed does not change with ambient temperature, and it can be different from cooling mode to heating mode. Minimum speed does not necessarily mean minimum capacity.

Wet-coil test means a test conducted at test conditions that typically cause water vapor to condense on the test unit evaporator coil.

2. Testing Overview and Conditions

(A) Test VRF systems using ANSI/AHRI Standard 1230–2010 sections 3 (except 3.8, 3.9, 3.13, 3.14, 3.15, 3.16, 3.23, 3.24, 3.26, 3.27, 3.28, 3.29, 3.30, and 3.31), 5.1.3, 5.1.4, 6.1.5 (except Table 8), 6.1.6, and 6.2 (incorporated by reference, see § 430.3) and Appendix M. Where ANSI/AHRI Standard 1230–2010 refers to the Appendix C therein substitute the provisions of this appendix. In cases where there is a conflict, the language of the test procedure in this appendix takes precedence over ANSI/AHRI Standard 1230–2010.

For definitions use section 1 of Appendix M and section 3 of ANSI/AHRI Standard 1230–2010, excluding sections 3.8, 3.9, 3.13, 3.14, 3.15, 3.16, 3.23, 3.24, 3.26, 3.27, 3.28, 3.29, 3.30, and 3.31. For rounding requirements refer to § 430.23 (m). For determination of certified rating requirements refer to § 429.16.

For test room requirements, refer to section 2.1 from Appendix M. For test unit installation requirements refer to sections 2.2.a, 2.2.b, 2.2.c, 2.2.1, 2.2.2, 2.2.3(a), 2.2.3(c), 2.2.4, 2.2.5, and 2.4 to 2.12 from Appendix M, and sections 5.1.3 and 5.1.4 of ANSI/AHRI Standard 1230–2010.

For general requirements for the test procedure refer to section 3.1 of Appendix M, except for sections 3.1.3 and 3.1.4, which are requirements for indoor air volume and outdoor air volume. For indoor air volume and outdoor air volume requirements, refer instead to section 6.1.5 (except Table 8) and 6.1.6 of ANSI/AHRI Standard 1230–2010. For external static pressure requirements, refer to Table 3 in Appendix M.

For the test procedure, refer to sections 3.3 to 3.5 and 3.7 to 3.13 in Appendix M. For cooling mode and heating mode test conditions, refer to section 6.2 of ANSI/AHRI Standard 1230–2010. For calculations of seasonal performance descriptors use section 4 of Appendix M.

(B) For systems other than VRF, only a subset of the sections listed in this test procedure apply when testing and rating a particular unit. Table 1 shows the sections of the test procedure that apply to each system. This table is meant to assist manufacturers in finding the appropriate sections of the test procedure; the appendix sections rather than the table provide the specific requirements for testing, and given the varied nature of available units, manufacturers are responsible for determining which sections apply to each unit tested. To use this table, first refer to the sections listed under ''all units''. Then refer to additional requirements based on: (1) System configuration(s), (2) the compressor staging or modulation capability, and (3) any special features.

Testing requirements for space-constrained products do not differ from similar equipment that is not space-constrained and thus are not listed separately in this table. Air conditioners and heat pumps are not listed separately in this table, but heating procedures and calculations apply only to heat pumps.

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			Testing conditions	Testing procedures			Calculations		
			General	General	Cooling*	Heating**	General	Cooling*	Heating**
Requirements for All units (except VRF)			2.1; 2.2a-c; 2.2.1; 2.2.4; 2.2.4.1; 2.2.4.1 (1); 2.2.4.2; 2.2.5.1-5; 2.2.5.7-8; 2.3; 2.3.1; 2.3.2; 2.4; 2.4.1a,d; 2.5a-c; 2.5.1; 2.5.2 - 2.5.4.2; 2.5.5 – 2.13	3.1; 3.1.1-3; 3.1.5-9; 3.11; 3.12	3.3; 3.4; 3.5a-i	3.1.4.7; 3.1.10; 3.7a,b,d; 3.8a,d; 3.8.1; 3.9; 3.10	4.4; 4.5; 4.6	4.1	4.2
Additional Requirements	System Configurations (more than one may apply)	Single split-system – blower coil	2.2a(1)		3.1.4.1.1; 3.1.4.1.1a,b; 3.1.4.2a-b; 3.1.4.3a-b	3.1.4.4.1; 3.1.4.4.2; 3.1.4.4.3a-b; 3.1.4.5.1; 3.1.4.5.2a-c; 3.1.4.6a-b			
		Single split-system - coil-only	2.2a(1); 2.2d,e;2.4d; 2.4.2		3.1.4.1.1; 3.1.4.1.1c; 3.1.4.2c; 3.5.1	3.1.4.4.1; 3.1.4.4.2; 3.1.4.4.3c; 3.1.4.5.2d; 3.7c; 3.8b; 3.9f; 3.9.1b			
		Tri-split	2.2a(2)						
		Outdoor unit with no match	2.2e						
		Single-package	2.2.4.1(2); 2.2.5.6b; 2.4.1; 2.4.2		3.1.4.1.1; 3.1.4.1.1a,b; 3.1.4.2a-b; 3.1.4.3a-b	3.1.4.4.1; 3.1.4.4.2; 3.1.4.4.3a-b; 3.1.4.5.1; 3.1.4.5.2a-c; 3.1.4.6a-b			
		Heat pump	2.2.5.6.a						
		Heating-only heat pump		3.1.7	3.1.4.1.1 Table 4	3.1.4.4.3			

		Two-capacity northern heat pump		3.1.4.4.2c; 3.1.4.5.2 c- d	3.2.3c	3.6.3			
		Triple-capacity northern heat pump			3.2.5	3.6.6			4.2.6
		SDHV (non-VRF)	2.2b; 2.4.1c; 2.5.4.3						
		Single- zone-multi-coil split and non-VRF multiple-split with duct	2.2a(1),(3); 2.2.3; 2.4.1b		3.1.4.1.1; 3.1.4.1.1a-b; 3.1.4.2a-b; 3.1.4.3a-b	3.1.4.4.1; 3.1.4.4.2; 3.1.4.4.3a-b; 3.1.4.5.1; 3.1.4.5.2a-c; 3.1.4.6a-b			
		Single-zone-multi-coil split and non-VRF multiple-split, ductless	2.2.a(1),(3); 2.2.3		3.1.4.1.2; 3.1.4.2d; 3.1.4.3c; 3.2.4c; 3.5c,g,h; 3.5.2; 3.8c	3.1.4.4.4; 3.1.4.5.2e; 3.1.4.6c; 3.6.4.c; 3.8c			
		VRF multiple-split† and VRF SDHV†	2.1; 2.2.a; 2.2.b; 2.2.c; 2.2.1; 2.2.2; 2.2.3(a); 2.2.3(c);, 2.2.4; 2.2.5; 2.4-2.12	3.1 (except 3.1.3, 3.1.4) 3.1.4.1.1c; 3.11-3.13	3.3-3.5	3.7–3.10	4.4; 4.5; 4.6	4.1	4.2
	Modulation Capability	Single speed compressor, fixed speed fan			3.2.1	3.6.1		4.1.1	4.2.1
		Single speed compressor, VAV fan		3.1.7	3.2.2	3.6.2		4.1.2	4.2.2
		Two-capacity compressor		3.1.10	3.2.3	3.6.3		4.1.3	4.2.3
		Variable speed compressor			3.2.4	3.6.4		4.1.4	4.2.4
	Special Features	Heat pump with heat comfort controller		3.1.9		3.6.5			4.2.5
		Units with a multi-speed outdoor fan	2.2.2						
		Single indoor unit having multiple blowers			3.26	3.6.2; 3.6.7		4.1.5	4.2.7

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* Does not apply to heating-only heat pumps.

** Applies only to heat pumps; not to air conditioners.

† Use ANSI/AHRI Standard 1230–2010 with Addendum 2, with the sections referenced in section 2(A) of this Appendix, in conjunction with the sections set forth in the table to perform test setup, testing, and calculations for rating VRF multiple-split and VRF SDHV systems.

NOTE: For all units, use section 3.13 for off mode testing procedures and section 4.3 for off mode calculations. For all units subject to an EER standard, use section 4.7 to determine the energy efficiency ratio.

2.1 Test room requirements.

a. Test using two side-by-side rooms, an indoor test room and an outdoor test room. For multiple-split, single-zone-multi-coil or multi-circuit air conditioners and heat pumps, however, use as many available indoor test rooms as needed to accommodate the total number of indoor units. These rooms must comply with the requirements specified in sections 8.1.2 and 8.1.3 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3).

b. Inside these test rooms, use artificial loads during cyclic tests and Frost Accumulation tests, if needed, to produce stabilized room air temperatures. For one room, select an electric resistance heater(s) having a heating capacity that is approximately equal to the heating capacity of the test unit's condenser. For the second room, select a heater(s) having a capacity that is close to the sensible cooling capacity of the test unit's evaporator. When applied, cycle the heater located in the same room as the test unit evaporator coil ON and OFF when the test unit cycles ON and OFF. Cycle the heater located in the same room as the test unit condensing coil ON and OFF when the test unit cycles OFF and ON.

2.2 Test unit installation requirements.

a. Install the unit according to section 8.2 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3), subject to the following additional requirements:

(1) When testing split systems, follow the requirements given in section 6.1.3.5 of AHRI 210/240–2008 (incorporated by reference, see § 430.3) with Addendum 1 and 2. For the vapor refrigerant line(s), use the insulation included with the unit; if no insulation is provided, refer to the specifications for the insulation in the installation instructions included with the unit by the manufacturer; if no insulation is included with the unit and the installation instructions do not contain provisions for insulating the line(s), fully insulate the vapor refrigerant line(s) with vapor proof insulation having an inside diameter that matches the refrigerant tubing and a nominal thickness of at least 0.5 inches. For the liquid refrigerant line(s), use the insulation included with the unit; if no insulation is provided, refer to the specifications for the insulation in the installation instructions included with the unit by the manufacturer; if no insulation is included with the unit and the installation instructions do not contain provisions for insulating the line(s), leave the liquid refrigerant line(s) exposed to the air for air conditioners and heat pumps that heat and cool; or, for heating-only heat pumps, insulate the liquid refrigerant line(s) with insulation having an inside diameter that matches the refrigerant tubing and a nominal thickness of at least 0.5 inches;

(2) When testing split systems, if the indoor unit does not ship with a cooling mode expansion device, test the system using the device as specified in the installation instructions provided with the indoor unit. If none is specified, test the system using a thermostatic expansion valve with internal pressure equalization that the valve manufacturer's product literature indicates is appropriate for the system.

(3) When testing triple-split systems (see section 1.2, Definitions), use the tubing length specified in section 6.1.3.5 of AHRI 210/240–2008 (incorporated by reference, see § 430.3) with Addendum 1 and 2 to connect the outdoor coil, indoor compressor section, and indoor coil while still meeting the requirement of exposing 10 feet of the tubing to outside conditions; or

(4) When testing split systems having multiple indoor coils, connect each indoor blower-coil to the outdoor unit using: (a) 25 feet of tubing, or (b) tubing furnished by the manufacturer, whichever is longer.

If they are needed to make a secondary measurement of capacity, install refrigerant pressure measuring instruments as described in section 8.2.5 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3). Refer to section 2.10 of this appendix to learn which secondary methods require refrigerant pressure measurements. At a minimum, insulate the low-pressure line(s) of a split system with insulation having an inside diameter that matches the refrigerant tubing and a nominal thickness of 0.5 inch.

b. For units designed for both horizontal and vertical installation or for both up-flow and down-flow vertical installations, the manufacturer must use the orientation for testing specified in the certification report. Conduct testing with the following installed:

(1) The most restrictive filter(s);

(2) Supplementary heating coils; and

(3) Other equipment specified as part of the unit, including all hardware used by a heat comfort controller if so equipped (see section 1, Definitions). For small-duct, high-velocity systems, configure all balance dampers or restrictor devices on or inside the unit to fully open or lowest restriction.

c. Testing a ducted unit without having an indoor air filter installed is permissible as long as the minimum external static pressure requirement is adjusted as stated in Table 3, note 3 (see section 3.1.4). Except as noted in section 3.1.10, prevent the indoor air supplementary heating coils from operating during all tests. For coil-only indoor units that are supplied without an enclosure, create an enclosure using 1 inch fiberglass ductboard having a nominal density of 6 pounds per cubic foot. Or alternatively, use some other insulating material having a thermal resistance (''R'' value) between 4 and 6 hr·ft^2· °F/Btu. For units where the coil is housed within an enclosure or cabinet, no extra insulating or sealing is allowed.

d. When testing coil-only central air conditioners and heat pumps, install a toroidal-type transformer to power the system's low-voltage components, complying with any additional requirements for this transformer mentioned in the installation manuals included with the unit by the manufacturer. If the installation manuals do not provide specifications for the transformer, use a transformer having the following features: (1) A nominal volt-amp rating that results in the transformer being loaded at a level that is between 25 and 90 percent based on the highest power value expected and then confirmed during the off mode test; (2) designed to operate with a primary input of 230 V, single phase, 60 Hz; and (3) that provides an output voltage that is within the specified range for each low-voltage component. The power consumption of the components connected to the transformer must be included as part of the total system power consumption during the off mode tests, less if included the power consumed by the transformer when no load is connected to it.

e. An outdoor unit with no match (*i.e.,* that is not sold with indoor units) shall be tested without an indoor blower installed, with a single cooling air volume rate, using an indoor unit whose coil has (1) round tubes of outer diameter no less than 0.375 inches, and (2) a normalized gross indoor fin surface (NGIFS) no greater than 1.15 square inches per British thermal unit per hour (sq. in./Btu/hr). NGIFS is calculated as follows:

$$NGIFS = 2 \times L_f \times W_f \times N_f \div \dot{Q}_c(95)$$

where,

L_f = Indoor coil fin length in inches, also height of the coil transverse to the tubes.
W_f = Indoor coil fin width in inches, also depth of the coil.
N_f = Number of fins.
$\dot{Q}_c(95)$ = the measured space cooling capacity of the tested outdoor unit/indoor unit combination as determined from the A2 or A Test whichever applies, Btu/h.

2.2.1 Defrost control settings.

Set heat pump defrost controls at the normal settings which most typify those encountered in generalized climatic region IV. (Refer to Figure 1 and Table 19 of section 4.2 for information on region IV.) For heat pumps that use a time-adaptive defrost control system (see section 1.2, Definitions), the manufacturer must specify the frosting interval to be used during Frost Accumulation tests and provide the procedure for manually initiating the defrost at the specified time. To ease testing of any unit, the manufacturer should provide information and any necessary hardware to manually initiate a defrost cycle.

2.2.2 Special requirements for units having a multiple-speed outdoor fan.

Configure the multiple-speed outdoor fan according to the installation manual included with the unit by the manufacturer, and thereafter, leave it unchanged for all tests. The controls of the unit must regulate the operation of the outdoor fan during all lab tests except dry coil cooling mode tests. For dry coil cooling mode tests, the outdoor fan must operate at the same speed used during the required wet coil test conducted at the same outdoor test conditions.

2.2.3 Special requirements for multi-split air conditioners and heat pumps, systems composed of multiple single-zone-multiple-coil split-system units (having multiple outdoor units located side-by-side), and ducted systems using a single indoor section containing multiple blowers that would normally operate using two or more indoor thermostats.

Because these systems will have more than one indoor blower and possibly multiple outdoor fans and compressor systems, references in this test procedure to a singular indoor blower, outdoor fan, and compressor means all indoor blowers, all outdoor fans, and all compressor systems that are energized during the test.

a. Additional requirements for multi-split air conditioners and heat pumps and systems composed of multiple single-zone-multiple-coil split-system units. For any test where the system is operated at part load (*i.e.,* one or more compressors ''off'', operating at the intermediate or minimum compressor speed, or at low compressor capacity), the manufacturer shall designate the indoor coil(s) that are not providing heating or cooling during the test such that the sum of the nominal heating or cooling capacity of the operational indoor units is within 5 percent of the intended part load heating or cooling capacity. For variable-speed systems, the manufacturer must designate at least one indoor unit that is not providing heating or cooling for all tests conducted at minimum compressor speed. For all other part-load tests, the manufacturer shall choose to turn off zero, one, two, or more indoor units. The chosen configuration shall remain unchanged for all tests conducted at the same compressor speed/capacity. For any indoor coil that is not providing heating or cooling during a test, cease forced airflow through this indoor coil and block its outlet duct.

b. Additional requirements for ducted systems with a single indoor section containing multiple blowers where the blowers are designed to cycle on and off independently of one another and are not controlled such that all blowers are modulated to always operate at the same air volume rate or speed. This Appendix covers systems with a single-speed compressor or systems offering two fixed stages of compressor capacity (*e.g.,* a two-speed compressor, two single-speed compressors). For any test where the system is operated at its lowest capacity—*i.e.,* the lowest total air volume rate allowed when operating the single-speed compressor or when operating at low compressor capacity—blowers accounting for at least one-third of the full-load air volume rate must be turned off unless prevented by the controls of the unit. In such cases, turn off as many blowers as permitted by the unit's controls. Where more than one option exists for meeting this ''off'' blower requirement, the manufacturer shall include in its installation manuals included with the unit which blower(s) are turned off. The chosen configuration shall remain unchanged for all tests conducted at the same lowest capacity configuration. For any indoor coil turned off during a test, cease forced airflow through any outlet duct connected to an ''off'' blower.

c. For test setups where it is physically impossible for the laboratory to use the required line length listed in Table 3 of ANSI/AHRI Standard 1230–2010 (incorporated by reference, see § 430.3) with Addendum 2, then the actual refrigerant line length used by the laboratory may exceed the required length and the refrigerant line length correction factors in Table 4 of ANSI/AHRI Standard 1230–2010 with Addendum 2 are applied.

2.2.4 Wet-bulb temperature requirements for the air entering the indoor and outdoor coils.

2.2.4.1 Cooling mode tests. For wet-coil cooling mode tests, regulate the water vapor content of the air entering the indoor unit to the applicable wet-bulb temperature listed in Tables 4 to 7. As noted in these same tables, achieve a wet-bulb temperature during dry-coil cooling mode tests that results in no condensate forming on the indoor coil. Controlling the water vapor content of the air entering the outdoor side of the unit is not required for cooling mode tests except when testing:

(1) Units that reject condensate to the outdoor coil during wet coil tests. Tables 4–7 list the applicable wet-bulb temperatures.

(2) Single-package units where all or part of the indoor section is located in the outdoor test room. The average dew point temperature of the air entering the outdoor coil during wet coil tests must be within ±3.0 °F of the average dew point temperature of the air entering the indoor coil over the 30-minute data collection interval described in section 3.3. For dry coil tests on such units, it may be necessary to limit the moisture content of the air entering the outdoor side of the unit to meet the requirements of section 3.4.

2.2.4.2 Heating mode tests.

For heating mode tests, regulate the water vapor content of the air entering the outdoor unit to the applicable wet-bulb temperature listed in Tables 11 to 14. The wet-bulb temperature entering the indoor side of the heat pump must not exceed 60 °F. Additionally, if the Outdoor Air Enthalpy test method is used while testing a single-package heat pump where all or part of the outdoor section is located in the indoor test room, adjust the wet-bulb temperature for the air entering the indoor side to yield an indoor-side dew point temperature that is as close as reasonably possible to the dew point temperature of the outdoor-side entering air.

2.2.5 Additional refrigerant charging requirements.

2.2.5.1 The ''manufacturer's published instructions,'' as stated in section 8.2 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3) and ''manufacturer's installation instructions'' discussed in this Appendix mean the manufacturer's installation instructions that come packaged with or appear in the labels applied to the unit. This does not include online manuals. Installation instructions that are shipped with the unit shall take precedence over installation instructions that appear in the labels applied to the unit.

2.2.5.2 Instructions to Use for Charging.

a. Where the manufacturer's installation instructions contain two sets of refrigerant charging criteria, one for field installations and one for lab testing, use the field installation criteria.

b. For systems consisting of an outdoor unit manufacturer's outdoor section and indoor section with differing charging procedures the refrigerant charge shall be adjusted per the outdoor installation instructions.

c. For systems consisting of an outdoor unit manufacturer's outdoor section and an independent coil manufacturer's indoor section with differing charging procedures the refrigerant charge shall be adjusted per the indoor installation instructions.

2.2.5.3 Test(s) to Use for Charging.

a. Use the tests or operating conditions specified in the manufacturer's installation instructions for charging.

b. If the manufacturer's installation instructions do not specify a test or operating conditions for charging or there are no manufacturer's instructions, use the following test(s):

(1) For air conditioners or cooling and heating heat pumps, use the A or A_2 test.

(2) For cooling and heating heat pumps that do not function in the H1 or $H1_2$ test with the charge set for the A or A_2 test and for heating-only heat pumps, use the H1 or $H1_2$ test.

2.2.5.4 Parameters to Set and Their Target Values.

a. Consult the manufacturer's installation instructions regarding which parameters to set and their target values. If the instructions provide ranges of values, select target values equal to the midpoints of the provided ranges.

b. In the event of conflicting information between charging instructions (defined as multiple conditions given for charge adjustment where all conditions specified cannot be met), follow the following hierarchy.

(1) For fixed orifice systems:
- (i) Superheat
- (ii) High side pressure or corresponding saturation or dew-point temperature
- (iii) Low side pressure or corresponding saturation or dew-point temperature
- (iv) Low side temperature
- (iii) High side temperature
- (iv) Charge weight

(2) For expansion valve systems:
- (i) Subcooling
- (ii) High side pressure or corresponding saturation or dew-point temperature
- (iii) Low side pressure or corresponding saturation or dew-point temperature
- (iv) Approach temperature (difference between temperature of liquid leaving condenser and condenser average inlet air temperature)
- (v) Charge weight

c. If there are no installation instructions and/or they do not provide parameters and target values, set superheat to a target value of 12 °F for fixed orifice systems or set subcooling to a target value of 10 °F for expansion valve systems.

2.2.5.5 Charging Tolerances.

a. If the manufacturer's installation instructions specify tolerances on target values for the charging parameters, set the values using these tolerances.

b. Otherwise, use the following tolerances for the different charging parameters:

1. Superheat: +/−2.0 °F
2. Subcooling: +/−0.6 °F

3. High side pressure or corresponding saturation or dew point temperature: +/−4.0 psi or +/−1.0 °F

4. Low side pressure or corresponding saturation or dew point temperature: +/−2.0 psi or +/−0.8 °F

5. High side temperature: +/−2.0 °F

6. Low side temperature: +/−2.0 °F

7. Approach temperature: +/−1.0 °F

8. Charge weight: +/−2.0 ounce

2.2.5.6 Special Charging Instructions.

a. Cooling and Heating Heat Pumps

If, using the initial charge set in the A or A_2 test, the conditions are not within the range specified in manufacturer's instructions for the H1 or $H1_2$ test, make as small as possible an adjustment to obtain conditions for this test in the specified range. After this adjustment, recheck conditions in the A or A_2 test to confirm that they are still within the specified range for this test.

b. Single-Package Systems

Unless otherwise directed by the manufacturer's installation instructions, install one or more refrigerant line pressure gauges during the setup of the unit if setting of refrigerant charge is based on certain operating parameters:

(1) Install a pressure gauge on the liquid line if charging is on the basis of subcooling, or high side pressure or corresponding saturation or dew point temperature;

(2) Install a pressure gauge on the suction line if charging is on the basis of superheat, or low side pressure or corresponding saturation or dew point temperature. If manufacturer's installation instructions indicate that pressure gauges are not to be installed, setting of charge shall not be based on any of the parameters listed in b.(1) and (2) of this section.

2.2.5.7 Near-azeotropic and zeotropic refrigerants.

Charging of near-azeotropic and zeotropic refrigerants shall only be performed with refrigerant in the liquid state.

2.2.5.8 Adjustment of charge between tests.

After charging the system as described in this test procedure, use the set refrigerant charge for all tests used to determine performance. Do not adjust the refrigerant charge at any point during testing.

2.3 Indoor air volume rates.

If a unit's controls allow for overspeeding the indoor blower (usually on a temporary basis), take the necessary steps to prevent overspeeding during all tests.

2.3.1 Cooling tests.

a. Set indoor blower airflow-control settings (*e.g.,* fan motor pin settings, fan motor speed) according to the installation instructions that are provided with the equipment while meeting the airflow requirements that are specified in section 3.1.4 of this appendix. If the manufacturer installation instructions do not provide guidance on the airflow-control settings for a system tested with the indoor blower installed, select the lowest speed that will satisfy the minimum external static pressure specified in section 3.1.4.1.1 of this appendix with an air volume rate at or higher than the rated full-load cooling air volume rate while meeting the maximum air flow requirement.

b. Express the Cooling Full-load Air Volume Rate, the Cooling Minimum Air Volume Rate, and the Cooling Intermediate Air Volume Rate in terms of standard air.

2.3.2 Heating tests.

a. If needed, set the indoor blower airflow-control settings (*e.g.,* fan motor pin settings, fan motor speed) according to the installation instructions that are provided with the equipment. Do this set-up while meeting all applicable airflow requirements specified in sections 3.1.4 of this appendix. For a cooling and heating heat pump tested with an indoor blower installed, if the manufacturer installation instructions do not provide guidance on the fan airflow-control settings, use the same airflow-control settings used for the cooling test. If the manufacturer installation instructions do not provide guidance on the airflow-control settings for a heating-only heat pump tested with the indoor blower installed, select the lowest speed that will satisfy the minimum external static pressure specified in section 3.1.4.4.3 of this appendix with an air volume rate at or higher than the rated heating full-load air volume rate.

b. Express the Heating Full-Load Air Volume Rate, the Heating Minimum Air Volume Rate, the Heating Intermediate Air Volume Rate, and the Heating Nominal Air Volume Rate in terms of standard air.

2.4 Indoor coil inlet and outlet duct connections.

Insulate and/or construct the outlet plenum described in section 2.4.1 of this appendix and, if installed, the inlet plenum described in section 2.4.2 of this appendix with thermal insulation having a nominal overall resistance (R-value) of at least 19 $hr \cdot ft^2 \cdot °F/Btu$.

2.4.1 Outlet plenum for the indoor unit.

a. Attach a plenum to the outlet of the indoor coil. (**NOTE:** for some packaged systems, the indoor coil may be located in the outdoor test room.)

b. For systems having multiple indoor coils, or multiple indoor blowers within a single indoor section, attach a plenum to each indoor coil or blower outlet. Connect two or more outlet plenums to a single common duct so that each indoor coil ultimately connects to an airflow measuring apparatus (section 2.6). If using more than one indoor test room, do likewise, creating one or more common ducts within each test room that contains multiple indoor coils. At the plane where each plenum enters a common duct, install an adjustable airflow damper and use it to equalize the static pressure in each plenum. Each outlet air temperature grid (section 2.5.4) and airflow measuring apparatus are located downstream of the inlet(s) to the common duct.

c. For small-duct, high-velocity systems, install an outlet plenum that has a diameter that is equal to or less than the value listed below. The limit depends only on the Cooling Full-Load Air Volume Rate (see section 3.1.4.1.1 of this appendix) and is effective regardless of the flange dimensions on the outlet of the unit (or an air supply plenum adapter accessory, if installed in accordance with the manufacturer's installation instructions).

d. Add a static pressure tap to each face of the (each) outlet plenum, if rectangular, or at four evenly distributed locations along the circumference of an oval or round plenum. Create a manifold that connects the four static pressure taps. Figures 7a, 7b, 7c of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3) shows two of the three options allowed for the manifold configuration; the third option is the broken-ring, four-to-one manifold configuration that is shown in Figure 7a of ASHRAE Standard 37–2009. See Figures 7a, 7b, 7c, and 8 of ASHRAE Standard 37–2009 for the cross-sectional dimensions and minimum length of the (each) plenum and the locations for adding the static pressure taps for units tested with and without an indoor blower installed.

TABLE 2—SIZE OF OUTLET PLENUM

Cooling full-load air volume rate (scfm)	Maximum diameter* of outlet plenum (inches)
≤500	6
501 to 700	7
701 to 900	8
901 to 1100	9
1101 to 1400	10
1401 to 1750	11

* If the outlet plenum is rectangular, calculate its equivalent diameter using (4*A/P,*) where *A* is the cross-sectional area and P is the perimeter of the rectangular plenum, and compare it to the listed maximum diameter.

2.4.2 Inlet plenum for the indoor unit.

Install an inlet plenum when testing a coil-only indoor unit or a packaged system where the indoor coil is located in the outdoor test room. Add static pressure taps at the center of each face of this plenum, if rectangular, or at four evenly distributed locations along the circumference of an oval or round plenum. Make a manifold that connects the four static-pressure taps using one of the three configurations specified in section 2.4.1. See Figures 7b, 7c, and Figure 8 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3) for cross-sectional dimensions, the minimum length of the inlet plenum, and the locations of the static-pressure taps. When testing a ducted unit having an indoor blower (and the indoor coil is in the indoor test room), test with an inlet plenum installed unless physically prohibited by space limitations within the test room. If used, construct the inlet plenum and add the four static-pressure taps as shown in Figure 8 of ASHRAE Standard 37–2009. If used, the inlet duct size shall equal the size of the inlet opening of the air-handling (blower coil) unit or furnace, with a minimum length of 6 inches. Manifold the four static-pressure taps using one of the three configurations specified in section 2.4.1.d. Never use an inlet plenum when testing a non-ducted system.

2.5 Indoor coil air property measurements and air damper box applications.

Follow instructions for indoor coil air property measurements as described in AHRI 210/240-Draft, appendix E, section E4, unless otherwise instructed in this section.

a. Measure the dry-bulb temperature and water vapor content of the air entering and leaving the indoor coil. If needed, use an air sampling device to divert air to a sensor(s) that measures the water vapor content of the air. See Section 5.3 of ASHRAE Standard 41.1–2013 (incorporated by reference, see § 430.3) for guidance on constructing an air sampling device. No part of the air sampling device or the tubing transferring the sampled air to the sensor shall be within two inches of the test chamber floor, and the transfer tubing shall be insulated. The sampling device may also divert air to a remotely located sensor(s) that measures dry bulb temperature. The air sampling device and the remotely located temperature sensor(s) may be used to determine the entering air dry bulb temperature during any test. The air sampling device and the remotely located leaving air dry bulb temperature sensor(s) may be used for all tests except:

(1) Cyclic tests; and

(2) Frost accumulation tests.

b. An acceptable alternative in all cases, including the two special cases noted above, is to install a grid of dry bulb temperature sensors within the outlet and inlet ducts. Use a temperature grid to get the average dry bulb temperature at one location, leaving or entering, or when two grids are applied as a thermopile, to directly obtain the temperature difference. A grid of temperature sensors (which may also be used for determining average leaving air dry bulb temperature) is required to measure the temperature distribution within a cross-section of the leaving airstream.

c. Use an inlet and outlet air damper box, an inlet upturned duct, or any combination thereof when conducting one or both of the cyclic tests listed in sections 3.2 and 3.6 on ducted systems. Otherwise if not conducting one or both of said cyclic tests, install an outlet air damper box when testing ducted and non-ducted heat pumps that cycle off the indoor blower during defrost cycles if no other means is available for preventing natural or forced convection through the indoor unit when the indoor blower is off. Never use an inlet damper box or an inlet upturned duct when testing a non-ducted system. An inlet upturned duct is a length of ductwork so installed upstream from the inlet such that the indoor duct inlet opening, facing upwards, is sufficiently high to prevent natural convection transfer out of the duct. If an inlet upturned duct is used, install a dry bulb temperature sensor near the inlet opening of the indoor duct at a centerline location not higher than the lowest elevation of the duct edges at the inlet, and ensure that the variation of the dry bulb temperature at this location, measured at least every minute during the compressor OFF period of the cyclic test, does not exceed 1.0 °F.

2.5.1 Test set-up on the inlet side of the indoor coil: For cases where the inlet airflow prevention device is installed.

a. Install an airflow prevention device as specified in section 2.5.1.1 or 2.5.1.2 of this appendix, whichever applies.

b. For an inlet damper box, locate the grid of entering air dry-bulb temperature sensors, if used, and the air sampling device, or the sensor used to measure the water vapor content of the inlet air, at a location immediately upstream of the damper box inlet. For an inlet upturned duct, locate the grid of entering air dry-bulb temperature sensors, if used, and the air sampling device, or the sensor used to measure the water vapor content of the inlet air, at a location at least one foot downstream from the beginning of the insulated portion of the duct but before the static pressure measurement; install a dry-bulb temperature sensor at a centerline location not higher than the lowest elevation of the duct edges at the device inlet.

2.5.1.1 If the section 2.4.2 inlet plenum is installed.

Construct the airflow prevention device having a cross-sectional flow area equal to or greater than the flow area of the inlet plenum. Install the airflow prevention device upstream of the inlet plenum and construct ductwork connecting it to the inlet plenum. If needed, use an adaptor plate or a transition duct section to connect the airflow prevention device with the inlet plenum. Insulate the ductwork and inlet plenum with thermal insulation that has a nominal overall resistance (R-value) of at least 19 hr · ft² · °F/Btu.

2.5.1.2 If the section 2.4.2 inlet plenum is not installed.

Construct the airflow prevention device having a cross-sectional flow area equal to or greater than the flow area of the air inlet of the indoor unit. Install the airflow prevention device immediately upstream of the inlet of the indoor unit. If needed, use an adaptor plate or a short transition duct section to connect the airflow prevention device with the unit's air inlet. Add static pressure taps at the center of each face of a rectangular airflow prevention device, or at four evenly distributed locations along the circumference of an oval or round airflow prevention device. Locate the pressure taps between the airflow prevention device and the inlet of the indoor unit. Make a manifold that connects the four static pressure taps. Insulate the ductwork with thermal insulation that has a nominal overall resistance (R-value) of at least 19 hr · ft² · °F/Btu.

2.5.2 Test set-up on the inlet side of the indoor unit: For cases where no airflow prevention device is installed.

If using the section 2.4.2 inlet plenum and a grid of dry bulb temperature sensors, mount the grid at a location upstream of the static pressure taps described in section 2.4.2, preferably at the entrance plane of the inlet plenum. If the section 2.4.2 inlet plenum is not used, but a grid of dry bulb temperature sensors is used, locate the grid approximately 6 inches upstream from the inlet of the indoor coil. Or, in the case of non-ducted units having multiple indoor coils, locate a grid approximately 6 inches upstream from the inlet of each indoor coil. Position an air sampling device, or the sensor used to measure the water vapor content of the inlet air, immediately upstream of the (each) entering air dry-bulb temperature sensor grid. If a grid of sensors is not used, position the entering air sampling device (or the sensor used to measure the water vapor content of the inlet air) as if the grid were present.

2.5.3 Indoor coil static pressure difference measurement.

Section 6.5.2 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3) describes the method for fabricating static-pressure taps. Also refer to Figure 2A of ASHRAE Standard 51–07/AMCA Standard 210–07 (incorporated by reference, see § 430.3). Use a differential pressure measuring instrument that is accurate to within ±0.01 inches of water and has a resolution of at least 0.01 inches of water to measure the static pressure difference between the indoor coil air inlet and outlet. Connect one side of the differential pressure instrument to the manifolded pressure taps installed in the outlet plenum. Connect the other side of the instrument to the manifolded pressure taps located in either the inlet plenum or incorporated within the airflow prevention device. If an inlet plenum or inlet airflow prevention device is not used, leave the inlet side of the differential pressure instrument open to the surrounding atmosphere. For non-ducted systems that are tested with multiple outlet plenums, measure the static pressure within each outlet plenum relative to the surrounding atmosphere.

2.5.4 Test set-up on the outlet side of the indoor coil.

a. Install an interconnecting duct between the outlet plenum described in section 2.4.1 of this appendix and the airflow measuring apparatus described below in section 2.6. The cross-sectional flow area of the interconnecting duct must be equal to or greater than the flow area of the outlet plenum or the common duct used when testing non-ducted units having multiple indoor coils. If needed, use adaptor plates or transition duct sections to allow the connections. To minimize leakage, tape joints within the interconnecting duct (and the outlet plenum). Construct or insulate the entire flow section with thermal insulation having a nominal overall resistance (R-value) of at least 19 hr · ft² · °F/Btu.

b. Install a grid(s) of dry-bulb temperature sensors inside the interconnecting duct. Also, install an air sampling device, or the sensor(s) used to measure the water vapor content of the outlet air, inside the interconnecting duct. Locate the dry-bulb temperature grid(s) upstream of the air sampling device (or the in-duct sensor(s) used to measure the water vapor content of the outlet air). Air that circulates through an air sampling device and past a remote water-vapor-content sensor(s) must be returned to the interconnecting duct at a location:

(1) Downstream of the air sampling device;

(2) Upstream of the outlet air damper box, if installed; and

(3) Upstream of the section 2.6 airflow measuring apparatus.

2.5.4.1 Outlet air damper box placement and requirements.

If using an outlet air damper box (see section 2.5), install it within the interconnecting duct at a location downstream of the location where air from the sampling device is reintroduced or downstream of the in-duct sensor that measures water vapor content of the outlet air. The leakage rate from the combination of the outlet plenum, the closed damper, and the duct section that connects these two components must not exceed 20 cubic feet per minute when a negative pressure of 1 inch of water column is maintained at the plenum's inlet.

2.5.4.2 Procedures to minimize temperature maldistribution.

Use these procedures if necessary to correct temperature maldistributions. Install a mixing device(s) upstream of the outlet air, dry-bulb temperature grid (but downstream of the outlet plenum static pressure taps). Use a perforated screen located between the mixing device and the dry-bulb temperature grid, with a maximum open area of 40 percent. One or both items should help to meet the maximum outlet air temperature distribution specified in section 3.1.8. Mixing devices are described in sections 5.3.2 and 5.3.3 of ASHRAE Standard 41.1–2013 and section 5.2.2 of ASHRAE Standard 41.2–87 (RA 92) (incorporated by reference, see § 430.3).

2.5.4.3 Minimizing air leakage.

For small-duct, high-velocity systems, install an air damper near the end of the interconnecting duct, just prior to the transition to the airflow measuring apparatus of section 2.6. To minimize air leakage, adjust this damper such that the pressure in the receiving chamber of the airflow measuring apparatus is no more than 0.5 inch of water higher than the surrounding test room ambient. If applicable, in lieu of installing a separate damper, use the outlet air damper box of sections 2.5 and 2.5.4.1 of this appendix if it allows variable positioning. Also apply these steps to any conventional indoor blower unit that creates a static pressure within the receiving chamber of the airflow measuring apparatus that exceeds the test room ambient pressure by more than 0.5 inches of water column.

2.5.5 Dry bulb temperature measurement.

a. Measure dry bulb temperatures as specified in sections 4, 5.3, 6, 7.2, and 7.3 of ASHRAE Standard 41.1–2013 (incorporated by reference, see § 430.3).

b. Distribute the sensors of a dry-bulb temperature grid over the entire flow area. The required minimum is 9 sensors per grid.

2.5.6 Water vapor content measurement.

Determine water vapor content by measuring dry-bulb temperature combined with the air wet-bulb temperature, dew point temperature, or relative humidity. If used, construct and apply wet-bulb temperature sensors as specified in sections 4, 5, 6, 7.2, 7.3, 7.4, and 7.5 of ASHRAE Standard 41.6–2014 (incorporated by reference, see § 430.3). The temperature sensor (wick removed) must be accurate to within ±0.2 °F. If used, apply dew point hygrometers as specified in sections 4, 5, 6, and 7.1 of ASHRAE Standard 41.6–2014. The dew point hygrometers must be accurate to within ±0.4 °F when operated at conditions that result in the evaluation of dew points above 35 °F. If used, a relative humidity (RH) meter must be accurate to within ±0.7% RH. Other means to determine the psychrometric state of air may be used as long as the measurement accuracy is equivalent to or better than the accuracy achieved from using a wet-bulb temperature sensor that meets the above specifications.

2.5.7 Air damper box performance requirements.

If used (see section 2.5), the air damper box(es) must be capable of being completely opened or completely closed within 10 seconds for each action.

2.6 Airflow measuring apparatus.

a. Fabricate and operate an Air Flow Measuring Apparatus as specified in section 6.2 and 6.3 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3). Refer to Figure 12 of ASHRAE Standard 51–07/AMCA Standard 210–07 or Figure 14 of ASHRAE Standard 41.2–87 (RA 92) (incorporated by reference, see § 430.3) for guidance on placing the static pressure taps and positioning the diffusion baffle (settling means) relative to the chamber inlet. When measuring the static pressure difference across nozzles and/or velocity pressure at nozzle throats using electronic pressure transducers and a data acquisition system, if high frequency fluctuations cause measurement variations to exceed the test tolerance limits specified in section 9.2 and Table 2 of ASHRAE Standard 37–2009, dampen the measurement system such that the time constant associated with response to a step change in measurement (time for the response to change 63% of the way from the initial output to the final output) is no longer than five seconds.

b. Connect the airflow measuring apparatus to the interconnecting duct section described in section 2.5.4. See sections 6.1.1, 6.1.2, and 6.1.4, and Figures 1, 2, and 4 of ASHRAE Standard 37–2009; and Figures D1, D2, and D4 of AHRI 210/240–2008 (incorporated by reference, see § 430.3) with Addendum 1 and 2 for illustrative examples of how the test apparatus may be applied within a complete laboratory set-up. Instead of following one of these examples, an alternative set-up may be used to handle the air leaving the airflow measuring apparatus and to supply properly conditioned air to the test unit's inlet. The alternative set-up, however, must not interfere with the prescribed means for measuring airflow rate, inlet and outlet air temperatures, inlet and outlet water vapor contents, and external static pressures, nor create abnormal conditions surrounding the test unit. (**Note:** Do not use an enclosure as described in section 6.1.3 of ASHRAE Standard 37–2009 when testing triple-split units.)

2.7 Electrical voltage supply.

Perform all tests at the voltage specified in section 6.1.3.2 of AHRI 210/240–2008 (incorporated by reference, see § 430.3) with Addendum 1 and 2 for ''Standard Rating Tests.'' If the voltage on the nameplate of indoor and outdoor units differs, the voltage supply on the outdoor unit shall be selected for testing. Measure the supply voltage at the terminals on the test unit using a volt meter that provides a reading that is accurate to within ±1.0 percent of the measured quantity.

2.8 Electrical power and energy measurements.

a. Use an integrating power (watt-hour) measuring system to determine the electrical energy or average electrical power supplied to all components of the air conditioner or heat pump (including auxiliary components such as controls, transformers, crankcase heater, integral condensate pump on non-ducted indoor units, etc.). The watt-hour measuring system must give readings that are accurate to within ±0.5 percent. For cyclic tests, this accuracy is required during both the ON and OFF cycles. Use either two different scales on the same watt-hour meter or two separate watt-hour meters. Activate the scale or meter having the lower power rating within 15 seconds after beginning an OFF cycle. Activate the scale or meter having the higher power rating active within 15 seconds prior to beginning an ON cycle. For ducted units tested with a fan installed, the ON cycle lasts from compressor ON to indoor blower OFF. For ducted units tested without an indoor blower installed, the ON cycle lasts from compressor ON to compressor OFF. For non-ducted units, the ON cycle lasts from indoor blower ON to indoor blower OFF. When testing air conditioners and heat pumps having a variable-speed compressor, avoid using an induction watt/watt-hour meter.

b. When performing section 3.5 and/or 3.8 cyclic tests on non-ducted units, provide instrumentation to determine the average electrical power consumption of the indoor blower motor to within ±1.0 percent. If required according to sections 3.3, 3.4, 3.7, 3.9.1 of this appendix, and/or 3.10, of this appendix this same instrumentation requirement applies when testing air conditioners and heat pumps having a variable-speed constant-air-volume-rate indoor blower or a variable-speed, variable-air-volume-rate indoor blower.

2.9 Time measurements.

Make elapsed time measurements using an instrument that yields readings accurate to within ±0.2 percent.

2.10 Test apparatus for the secondary space conditioning capacity measurement.

For all tests, use the Indoor Air Enthalpy Method to measure the unit's capacity. This method uses the test set-up specified in sections 2.4 to 2.6 of this appendix. In addition, for all steady-state tests, conduct a second, independent measurement of capacity as described in section 3.1.1. For split systems, use one of the following secondary measurement methods: Outdoor Air Enthalpy Method, Compressor Calibration Method, or Refrigerant Enthalpy Method. For single-package units, use either the Outdoor Air Enthalpy Method or the Compressor Calibration Method as the secondary measurement.

2.10.1 Outdoor Air Enthalpy Method.

a. To make a secondary measurement of indoor space conditioning capacity using the Outdoor Air Enthalpy Method, do the following:

(1) Measure the electrical power consumption of the test unit;

(2) Measure the air-side capacity at the outdoor coil; and

(3) Apply a heat balance on the refrigerant cycle.

b. The test apparatus required for the Outdoor Air Enthalpy Method is a subset of the apparatus used for the Indoor Air Enthalpy Method. Required apparatus includes the following:

(1) On the outlet side, an outlet plenum containing static pressure taps (sections 2.4, 2.4.1, and 2.5.3),

(2) An airflow measuring apparatus (section 2.6),

(3) A duct section that connects these two components and itself contains the

instrumentation for measuring the dry-bulb temperature and water vapor content of the air leaving the outdoor coil (sections 2.5.4, 2.5.5, and 2.5.6), and

(4) On the inlet side, a sampling device and temperature grid (section 2.11b.).

c. During the preliminary tests described in sections 3.11.1 and 3.11.1.1, measure the evaporator and condenser temperatures or pressures. On both the outdoor coil and the indoor coil, solder a thermocouple onto a return bend located at or near the midpoint of each coil or at points not affected by vapor superheat or liquid subcooling. Alternatively, if the test unit is not sensitive to the refrigerant charge, install pressure gages to the access valves or to ports created from tapping into the suction and discharge lines according to sections 7.4.2 and 8.2.5 of ASHRAE Standard 37–2009. Use this alternative approach when testing a unit charged with a zeotropic refrigerant having a temperature glide in excess of 1 °F at the specified test conditions.

2.10.2 Compressor Calibration Method.

Measure refrigerant pressures and temperatures to determine the evaporator superheat and the enthalpy of the refrigerant that enters and exits the indoor coil. Determine refrigerant flow rate or, when the superheat of the refrigerant leaving the evaporator is less than 5 °F, total capacity from separate calibration tests conducted under identical operating conditions. When using this method, install instrumentation, measure refrigerant properties, and adjust the refrigerant charge according to section 7.4.2 and 8.2.5 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3). Use refrigerant temperature and pressure measuring instruments that meet the specifications given in sections 5.1.1 and 5.2 of ASHRAE Standard 37–2009.

2.10.3 Refrigerant Enthalpy Method.

For this method, calculate space conditioning capacity by determining the refrigerant enthalpy change for the indoor coil and directly measuring the refrigerant flow rate. Use section 7.5.2 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3) for the requirements for this method, including the additional instrumentation requirements, and information on placing the flow meter and a sight glass. Use refrigerant temperature, pressure, and flow measuring instruments that meet the specifications given in sections 5.1.1, 5.2, and 5.5.1 of ASHRAE Standard 37–2009. Refrigerant flow measurement device(s), if used, must be elevated at least two feet from the test chamber floor or placed upon insulating material having a total thermal resistance of at least R–12 and extending at least one foot laterally beyond each side of the device(s)' exposed surfaces, unless the device(s) are elevated at least two feet from the floor.

2.11 Measurement of test room ambient conditions.

Follow instructions for measurement of test room ambient conditions as described in AHRI 210/240-Draft, appendix E, section E4, unless otherwise instructed in this section.

a. If using a test set-up where air is ducted directly from the conditioning apparatus to the indoor coil inlet (see Figure 2, Loop Air-Enthalpy Test Method Arrangement, of ASHRAE Standard 37–2009), add instrumentation to permit measurement of the indoor test room dry-bulb temperature.

b. For the outdoor side, install a grid of evenly-distributed sensors on every air-permitting face on the inlet of the outdoor unit, such that each measurement represents an air-inlet area of no more than one square foot. This grid must be constructed and applied as per section 5.3 of ASHRAE Standard 41.1–2013 (incorporated by reference, see § 430.3). The maximum and minimum temperatures measured by these sensors may differ by no more than 1.5 °F—otherwise adjustments to the test room must be made to improve temperature uniformity. The outdoor conditions shall be verified with the air collected by air sampling device. Air collected by an air sampling device at the air inlet of the outdoor unit for transfer to sensors for measurement of temperature and/or humidity shall be protected from temperature change as follows: Any surface of the air conveying tubing in contact with surrounding air at a different temperature than the sampled air shall be insulated with thermal insulation with a nominal thermal resistance (R-value) of at least 19 hr ·ft^2 · °F/Btu, no part of the air sampling device or the tubing conducting the sampled air to the sensors shall be within two inches of the test chamber floor, and pairs of measurements (*e.g.* dry bulb temperature and wet bulb temperature) used to determine water vapor content of sampled air shall be measured in the same location. Take steps (*e.g.,* add or re-position a lab circulating fan), as needed, to maximize temperature uniformity within the outdoor test room. However, ensure that any fan used for this purpose does not cause air velocities in the vicinity of the test unit to exceed 500 feet per minute.

c. Measure dry bulb temperatures as specified in sections 4, 5, 7.2, 6, and 7.3 of ASHRAE Standard 41.1–2013. Measure water vapor content as stated in section 2.5.6.

2.12 Measurement of indoor blower speed.

When required, measure fan speed using a revolution counter, tachometer, or stroboscope that gives readings accurate to within ±1.0 percent.

2.13 Measurement of barometric pressure.

Determine the average barometric pressure during each test. Use an instrument that meets the requirements specified in section 5.2 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3).

3. Testing Procedures

3.1 General Requirements.

If, during the testing process, an equipment set-up adjustment is made that would have altered the performance of the unit during any already completed test, then repeat all tests affected by the adjustment. For cyclic tests, instead of maintaining an air volume rate, for each airflow nozzle, maintain the static pressure difference or velocity pressure during an ON period at the same pressure difference or velocity pressure as measured during the steady-state test conducted at the same test conditions.

Use the testing procedures in this section to collect the data used for calculating (1) performance metrics for central air conditioners and heat pumps during the cooling season; (2) performance metrics for heat pumps during the heating season; and (3) power consumption metric(s) for central air conditioners and heat pumps during the off mode season(s).

3.1.1 Primary and secondary test methods.

For all tests, use the Indoor Air Enthalpy Method test apparatus to determine the unit's space conditioning capacity. The procedure and data collected, however, differ slightly depending upon whether the test is a steady-state test, a cyclic test, or a Frost Accumulation test. The following sections described these differences. For all steady-state tests (*i.e.,* the A, A_2, A_1, B, B_2, B_1, C, C_1, EV, F_1, G_1, $H0_1$, H_1, $H1_2$, $H1_1$, HI_N, H_3, $H3_2$, and $H3_1$ Tests), in addition, use one of the acceptable secondary methods specified in section 2.10 to determine indoor space conditioning capacity. Calculate this secondary check of capacity according to section 3.11. The two capacity measurements must agree to within 6 percent to constitute a valid test. For this capacity comparison, use the Indoor Air Enthalpy Method capacity that is calculated in section 7.3 of ASHRAE Standard 37–2009 (and, if testing a coil-only system, do not make the after-test fan heat adjustments described in section 3.3, 3.4, 3.7, and 3.10 of this appendix). However, include the appropriate section 3.3 to 3.5 and 3.7 to 3.10 fan heat adjustments within the Indoor Air Enthalpy Method capacities used for the section 4 seasonal calculations.

3.1.2 Manufacturer-provided equipment overrides.

Where needed, the manufacturer must provide a means for overriding the controls of the test unit so that the compressor(s) operates at the specified speed or capacity and the indoor blower operates at the specified speed or delivers the specified air volume rate.

3.1.3 Airflow through the outdoor coil.

For all tests, meet the requirements given in section 6.1.3.4 of AHRI 210/240–2008 (incorporated by reference, see § 430.3) with Addendum 1 and 2 when obtaining the airflow through the outdoor coil.

3.1.3.1 Double-ducted. For products intended to be installed with the outdoor airflow ducted, the unit shall be installed with outdoor coil ductwork installed per manufacturer installation instructions and shall operate between 0.10 and 0.15 in H_2O external static pressure. External static pressure measurements shall be made in accordance with ASHRAE Standard 37–2009 Section 6.4 and 6.5.

3.1.4 Airflow through the indoor coil.

Airflow setting(s) shall be determined before testing begins. Unless otherwise specified within this or its subsections, no changes shall be made to the airflow setting(s) after initiation of testing.

3.1.4.1 Cooling Full-load Air Volume Rate.

3.1.4.1.1 Cooling Full-Load Air Volume Rate for Ducted Units.

The manufacturer must specify the cooling full-load air volume rate and the instructions for setting fan speed or controls. Adjust the cooling full-load air volume rate if needed to satisfy the additional requirements of this section. First, when conducting the A or A_2 Test (exclusively), the measured air volume rate, when divided by the measured indoor air-side total cooling capacity must not exceed 37.5 cubic feet per minute of standard air (scfm) per 1000 Btu/h. If this ratio is exceeded, reduce the air volume rate until this ratio is equaled. Use this reduced air volume rate for all tests that call for using the Cooling Full-load Air Volume Rate. Pressure requirements are as follows:

a. For all ducted units tested with an indoor blower installed, except those having a constant-air-volume-rate indoor blower:

1. Achieve the Cooling Full-load Air Volume Rate, determined in accordance with the previous paragraph;

2. Measure the external static pressure;

3. If this pressure is equal to or greater than the applicable minimum external static pressure cited in Table 3, the pressure requirement is satisfied. Use the current air volume rate for all tests that require the Cooling Full-load Air Volume Rate.

4. If the Table 3 minimum is not equaled or exceeded,

4a. reduce the air volume rate and increase the external static pressure by adjusting the exhaust fan of the airflow measuring apparatus until the applicable Table 3 minimum is equaled or

4b. until the measured air volume rate equals 90 percent of the air volume rate from step 1, whichever occurs first.

5. If the conditions of step 4a occur first, the pressure requirement is satisfied. Use the step 4a reduced air volume rate for all tests that require the Cooling Full-load Air Volume Rate.

6. If the conditions of step 4b occur first, make an incremental change to the set-up of the indoor blower (*e.g.,* next highest fan motor pin setting, next highest fan motor speed) and repeat the evaluation process beginning at above step 1. If the indoor blower set-up cannot be further changed, reduce the air volume rate and increase the external static pressure by adjusting the exhaust fan of the airflow measuring apparatus until the applicable Table 3 minimum is equaled. Use this reduced air volume rate for all tests that require the Cooling Full-load Air Volume Rate.

b. For ducted units that are tested with a constant-air-volume-rate indoor blower installed. For all tests that specify the Cooling Full-load Air Volume Rate, obtain an external static pressure as close to (but not less than) the applicable Table 3 value that does not cause automatic shutdown of the indoor blower or air volume rate variation Q_{Var}, defined as follows, greater than 10 percent.

$$Q_{Var} = \left[\frac{Q_{max} - Q_{min}}{\left(\frac{Q_{max} + Q_{min}}{2}\right)}\right] * 100$$

Where:

Q_{max} = maximum measured airflow value
Q_{min} = minimum measured airflow value
Q_{Var} = airflow variance, percent

Additional test steps as described in section 3.3.(e) of this appendix are required if the measured external static pressure exceeds the target value by more than 0.03 inches of water.

c. For ducted units that are tested without an indoor fan installed. For the A or A_2 Test, (exclusively), the pressure drop across the indoor coil assembly must not exceed 0.30 inches of water. If this pressure drop is exceeded, reduce the air volume rate until the measured pressure drop equals the specified maximum. Use this reduced air volume rate for all tests that require the Cooling Full-load Air Volume Rate.

TABLE 3—MINIMUM EXTERNAL STATIC PRESSURE FOR DUCTED SYSTEMS TESTED WITH AN INDOOR BLOWER INSTALLED

Rated cooling [1] or heating [2] capacity (Btu/h)	Minimum external resistance [3] (inches of water)		
	Short ducted systems [4]	Small-duct, high-velocity systems [4 5]	All other systems
Up Thru 28,800	0.03	1.10	0.10
29,000 to 42,500	0.05	1.15	0.15
43,000 and Above	0.07	1.20	0.20

[1] For air conditioners and heat pumps, the value cited by the manufacturer in published literature for the unit's capacity when operated at the *A* or A_2 Test conditions.

[2] For heating-only heat pumps, the value the manufacturer cites in published literature for the unit's capacity when operated at the *H1* or $H1_2$ Test conditions.

[3] For ducted units tested without an air filter installed, increase the applicable tabular value by 0.08 inches of water.

[4] See section 1.2, Definitions, to determine if the equipment qualifies as a short-ducted or a small-duct, high-velocity system.

[5] If a closed-loop, air-enthalpy test apparatus is used on the indoor side, limit the resistance to airflow on the inlet side of the indoor blower coil to a maximum value of 0.1 inch of water. Impose the balance of the airflow resistance on the outlet side of the indoor blower.

d. For ducted systems having multiple indoor blowers within a single indoor section, obtain the full-load air volume rate with all blowers operating unless prevented by the controls of the unit. In such cases, turn on the maximum number of blowers permitted by the unit's controls. Where more than one option exists for meeting this ''on'' blower requirement, which blower(s) are turned on must match that specified by the manufacturer in the installation manuals included with the unit. Conduct section 3.1.4.1.1 setup steps for each blower separately. If two or more indoor blowers are connected to a common duct as per section 2.4.1, either turn off the other indoor blowers connected to the same common duct or temporarily divert their air volume to the test room when confirming or adjusting the setup configuration of individual blowers. If the indoor blowers are all the same size or model, the target air volume rate for each blower plenum equals the full-load air volume rate divided by the number of ''on'' blowers. If different size blowers are used within the indoor section, the allocation of the system's full-load air volume rate assigned to each ''on'' blower must match that specified by the manufacturer in the installation manuals included with the unit.

3.1.4.1.2 Cooling Full-load Air Volume Rate for Non-ducted Units.

For non-ducted units, the Cooling Full-load Air Volume Rate is the air volume rate that results during each test when the unit is operated at an external static pressure of zero inches of water.

3.1.4.2 Cooling Minimum Air Volume Rate.

The manufacturer must specify the cooling minimum air volume rate and the instructions for setting fan speed or controls. The target external static pressure, ΔP_{st_i}, for any test ''i'' with a specified air volume rate not equal to the cooling full-load air volume rate is determined as follows.

$$\Delta P_{st\_i} = \Delta P_{st\_full} \left[\frac{Q_i}{Q_{full}}\right]^2$$

Where:

ΔP_{st_i} = target minimum external static pressure for test i;
ΔP_{st_full} = minimum external static pressure for test A or A_2 (Table 3);
Q_i = air volume rate for test i; and
Q_{full} = cooling full-load air volume rate as measured after setting and/or adjustment as described in section 3.1.4.1.1.

a. For ducted units tested with an indoor blower installed that is not a constant-air-volume indoor blower, adjust for external static pressure as follows.

1. Achieve the manufacturer-specified cooling minimum air volume rate;

2. Measure the external static pressure;

3. If this pressure is equal to or greater than the target minimum external static pressure calculated as described above, use the

current air volume rate for all tests that require the cooling minimum air volume rate.

4. If the target minimum is not equaled or exceeded,

4a. reduce the air volume rate and increase the external static pressure by adjusting the exhaust fan of the airflow measuring apparatus until the applicable target minimum is equaled or

4b. until the measured air volume rate equals 90 percent of the air volume rate from step 1, whichever occurs first.

5. If the conditions of step 4a occur first, use the step 4a reduced air volume rate for all tests that require the cooling minimum air volume rate.

6. If the conditions of step 4b occur first, make an incremental change to the set-up of the indoor fan (*e.g.,* next highest fan motor pin setting, next highest fan motor speed) and repeat the evaluation process beginning at above step 1. If the indoor fan set-up cannot be further changed, reduce the air volume rate and increase the external static pressure by adjusting the exhaust fan of the airflow measuring apparatus until the applicable target minimum is equaled. Use this reduced air volume rate for all tests that require the cooling minimum air volume rate.

b. For ducted units with constant-air-volume indoor blowers, conduct all tests that specify the cooling minimum air volume rate—(*i.e.,* the A_1, B_1, C_I, F_1, and G_I Tests)—at an external static pressure that does not cause an automatic shutdown of the indoor blower or air volume rate variation Q_{Var}, defined in section 3.1.4.1.1.b, greater than 10 percent, while being as close to, but not less than the target minimum external static pressure. Additional test steps as described in section 3.3(e) of this appendix are required if the measured external static pressure exceeds the target value by more than 0.03 inches of water.

c. For ducted two-capacity units that are tested without an indoor blower installed, the Cooling Minimum Air Volume Rate is the higher of (1) the rate specified by the installation instructions included with the unit by the manufacturer or (2) 75 percent of the Cooling Full-load Air Volume Rate. During the laboratory tests on a coil-only (fanless) unit, obtain this Cooling Minimum Air Volume Rate regardless of the pressure drop across the indoor coil assembly.

d. For non-ducted units, the Cooling Minimum Air Volume Rate is the air volume rate that results during each test when the unit operates at an external static pressure of zero inches of water and at the indoor fan setting used at low compressor capacity (two-capacity system) or minimum compressor speed (variable-speed system). For units having a single-speed compressor and a variable-speed variable-air-volume-rate indoor fan, use the lowest fan setting allowed for cooling.

e. For ducted systems having multiple indoor blowers within a single indoor section, operate the indoor blowers such that the lowest air volume rate allowed by the unit's controls is obtained when operating the lone single-speed compressor or when operating at low compressor capacity while meeting the requirements of section 2.2.3.2 for the minimum number of blowers that must be turned off. Adjust for external static pressure and if necessary adjust air volume rates as described in section 3.1.4.2.a if the indoor fan is not a constant-air-volume indoor fan or as described in section 3.1.4.2.b if the indoor fan is a constant-air-volume indoor fan. The sum of the individual "on" blowers' air volume rates is the cooling minimum air volume rate for the system.

3.1.4.3 Cooling Intermediate Air Volume Rate.

The manufacturer must specify the cooling intermediate air volume rate and the instructions for setting fan speed or controls. Calculate target minimum external static pressure as described in section 3.1.4.2.

a. For ducted units tested with an indoor blower, installed that is not a constant-air-volume indoor blower, adjust for external static pressure as described in section 3.1.4.2.a for cooling minimum air volume rate.

b. For ducted units tested with constant-air-volume indoor blowers installed, conduct the E_V Test at an external static pressure that does not cause an automatic shutdown of the indoor blower or air volume rate variation Q_{Var}, defined in section 3.1.4.1.1.b, greater than 10 percent, while being as close to, but not less than the target minimum external static pressure. Additional test steps as described in section 3.3(e) of this appendix are required if the measured external static pressure exceeds the target value by more than 0.03 inches of water.

c. For non-ducted units, the Cooling Intermediate Air Volume Rate is the air volume rate that results when the unit operates at an external static pressure of zero inches of water and at the fan speed selected by the controls of the unit for the E_V Test conditions.

3.1.4.4 Heating Full-load Air Volume Rate.

3.1.4.4.1 Ducted heat pumps where the Heating and Cooling Full-load Air Volume Rates are the same.

a. Use the Cooling Full-load Air Volume Rate as the Heating Full-load Air Volume Rate for:

1. Ducted heat pumps tested with an indoor blower installed that is not a constant-air-volume indoor blower that operates at the same airflow-control setting during both the A (or A_2) and the H1 (or $H1_2$) Tests;

2. Ducted heat pumps tested with constant-air-flow indoor blowers installed that provide the same air flow for the A (or A_2) and the H1 (or $H1_2$) Tests; and

3. Ducted heat pumps that are tested without an indoor blower installed (except two-capacity northern heat pumps that are tested only at low capacity cooling—see 3.1.4.4.2).

b. For heat pumps that meet the above criteria "1" and "3," no minimum requirements apply to the measured external or internal, respectively, static pressure. For heat pumps that meet the above criterion "2," test at an external static pressure that does not cause an automatic shutdown of the indoor blower or air volume rate variation Q_{Var}, defined in section 3.1.4.1.1.b, greater than 10 percent, while being as close to, but not less than, the same Table 3 minimum external static pressure as was specified for the A (or A_2) cooling mode test. Additional test steps as described in section 3.9.1(c) of this appendix are required if the measured external static pressure exceeds the target value by more than 0.03 inches of water.

3.1.4.4.2 Ducted heat pumps where the Heating and Cooling Full-load Air Volume Rates are different due to indoor blower operation.

The manufacturer must specify the heating full-load air volume rate and the instructions for setting fan speed or controls. Calculate target minimum external static pressure as described in section 3.1.4.2.

a. For ducted heat pumps tested with an indoor blower installed that is not a constant-air-volume indoor blower, adjust for external static pressure as described in section 3.1.4.2.a for cooling minimum air volume rate.

b. For ducted heat pumps tested with constant-air-volume indoor blowers installed, conduct all tests that specify the heating full-load air volume rate at an external static pressure that does not cause an automatic shutdown of the indoor blower or air volume rate variation Q_{Var}, defined in section 3.1.4.1.1.b, greater than 10 percent, while being as close to, but not less than the target minimum external static pressure. Additional test steps as described in section 3.9.1(c) of this appendix are required if the measured external static pressure exceeds the target value by more than 0.03 inches of water.

c. When testing ducted, two-capacity northern heat pumps (see section 1.2, Definitions), use the appropriate approach of the above two cases for units that are tested with an indoor blower installed. For coil-only northern heat pumps, the Heating Full-load Air Volume Rate is the lesser of the rate specified by the manufacturer in the installation instructions included with the unit or 133 percent of the Cooling Full-load Air Volume Rate. For this latter case, obtain the Heating Full-load Air Volume Rate regardless of the pressure drop across the indoor coil assembly.

d. For ducted systems having multiple indoor blowers within a single indoor section, obtain the heating full-load air volume rate using the same "on" blowers as used for the cooling full-load air volume rate. For systems where individual blowers regulate the speed (as opposed to the cfm) of the indoor blower, use the first section 3.1.4.2 equation for each blower individually. Sum the individual blower air volume rates to obtain the heating full-load air volume rate for the system.

3.1.4.4.3 Ducted heating-only heat pumps.

The manufacturer must specify the Heating Full-load Air Volume Rate.

a. For all ducted heating-only heat pumps tested with an indoor blower installed, except those having a constant-air-volume-rate indoor blower. Conduct the following steps only during the first test, the H1 or $H1_2$ Test.

1. Achieve the Heating Full-load Air Volume Rate.

2. Measure the external static pressure.

3. If this pressure is equal to or greater than the Table 3 minimum external static pressure that applies given the heating-only heat pump's rated heating capacity, use the

current air volume rate for all tests that require the Heating Full-load Air Volume Rate.

4. If the Table 3 minimum is not equaled or exceeded,

4a. reduce the air volume rate and increase the external static pressure by adjusting the exhaust fan of the airflow measuring apparatus until the applicable Table 3 minimum is equaled or

4b. until the measured air volume rate equals 90 percent of the manufacturer-specified Full-load Air Volume Rate, whichever occurs first.

5. If the conditions of step 4a occurs first, use the step 4a reduced air volume rate for all tests that require the Heating Full-load Air Volume Rate.

6. If the conditions of step 4b occur first, make an incremental change to the set-up of the indoor blower (*e.g.,* next highest fan motor pin setting, next highest fan motor speed) and repeat the evaluation process beginning at above step 1. If the indoor blower set-up cannot be further changed, reduce the air volume rate until the applicable Table 3 minimum is equaled. Use this reduced air volume rate for all tests that require the Heating Full-load Air Volume Rate.

b. For ducted heating-only heat pumps that are tested with a constant-air-volume-rate indoor blower installed. For all tests that specify the Heating Full-load Air Volume Rate, obtain an external static pressure that does not cause an automatic shutdown of the indoor blower or air volume rate variation Q_{Var}, defined in section 3.1.4.1.1.b, greater than 10 percent, while being as close to, but not less than, the applicable Table 3 minimum. Additional test steps as described in section 3.9.1(c) of this appendix are required if the measured external static pressure exceeds the target value by more than 0.03 inches of water.

c. For ducted heating-only heat pumps that are tested without an indoor blower installed. For the H1 or $H1_2$ Test, (exclusively), the pressure drop across the indoor coil assembly must not exceed 0.30 inches of water. If this pressure drop is exceeded, reduce the air volume rate until the measured pressure drop equals the specified maximum. Use this reduced air volume rate for all tests that require the Heating Full-load Air Volume Rate.

3.1.4.4.4 Non-ducted heat pumps, including non-ducted heating-only heat pumps.

For non-ducted heat pumps, the Heating Full-load Air Volume Rate is the air volume rate that results during each test when the unit operates at an external static pressure of zero inches of water.

3.1.4.5 Heating Minimum Air Volume Rate.

3.1.4.5.1 Ducted heat pumps where the Heating and Cooling Minimum Air Volume Rates are the same.

a. Use the Cooling Minimum Air Volume Rate as the Heating Minimum Air Volume Rate for:

1. Ducted heat pumps tested with an indoor blower installed that is not a constant-air-volume indoor blower that operates at the same airflow-control setting during both the A_1 and the $H1_1$ tests;

2. Ducted heat pumps tested with constant-air-flow indoor blowers installed that provide the same air flow for the A_1 and the $H1_1$ Tests; and

3. Ducted heat pumps that are tested without an indoor blower installed (except two-capacity northern heat pumps that are tested only at low capacity cooling—see 3.1.4.4.2).

b. For heat pumps that meet the above criteria ''1'' and ''3,'' no minimum requirements apply to the measured external or internal, respectively, static pressure. For heat pumps that meet the above criterion ''2,'' test at an external static pressure that does not cause an automatic shutdown of the indoor blower or air volume rate variation Q_{Var}, defined in section 3.1.4.1.1.b, greater than 10 percent, while being as close to, but not less than, the same target minimum external static pressure as was specified for the A_1 cooling mode test. Additional test steps as described in section 3.9.1(c) of this appendix are required if the measured external static pressure exceeds the target value by more than 0.03 inches of water.

3.1.4.5.2 Ducted heat pumps where the Heating and Cooling Minimum Air Volume Rates are different due to indoor blower operation.

The manufacturer must specify the heating minimum volume rate and the instructions for setting fan speed or controls. Calculate target minimum external static pressure as described in section 3.1.4.2.

a. For ducted heat pumps tested with an indoor blower installed that is not a constant-air-volume indoor blower, adjust for external static pressure as described in section 3.1.4.2.a for cooling minimum air volume rate.

b. For ducted heat pumps tested with constant-air-volume indoor blowers installed, conduct all tests that specify the Heating Minimum Air Volume Rate—(*i.e.,* the $H0_1$, $H1_1$, $H2_1$, and $H3_1$ Tests)—at an external static pressure that does not cause an automatic shutdown of the indoor blower while being as close to, but not less thanor air volume rate variation Q_{Var}, defined in section 3.1.4.1.1.b, greater than 10 percent, while being as close to, but not less than the target minimum external static pressure. Additional test steps as described in section 3.9.1(c) of this appendix are required if the measured external static pressure exceeds the target value by more than 0.03 inches of water.

c. For ducted two-capacity northern heat pumps that are tested with an indoor blower installed, use the appropriate approach of the above two cases.

d. For ducted two-capacity heat pumps that are tested without an indoor blower installed, use the Cooling Minimum Air Volume Rate as the Heating Minimum Air Volume Rate. For ducted two-capacity northern heat pumps that are tested without an indoor blower installed, use the Cooling Full-load Air Volume Rate as the Heating Minimum Air Volume Rate. For ducted two-capacity heating-only heat pumps that are tested without an indoor blower installed, the Heating Minimum Air Volume Rate is the higher of the rate specified by the manufacturer in the test setup instructions included with the unit or 75 percent of the Heating Full-load Air Volume Rate. During the laboratory tests on a coil-only system, obtain the Heating Minimum Air Volume Rate without regard to the pressure drop across the indoor coil assembly.

e. For non-ducted heat pumps, the Heating Minimum Air Volume Rate is the air volume rate that results during each test when the unit operates at an external static pressure of zero inches of water and at the indoor blower setting used at low compressor capacity (two-capacity system) or minimum compressor speed (variable-speed system). For units having a single-speed compressor and a variable-speed, variable-air-volume-rate indoor blower, use the lowest fan setting allowed for heating.

f. For ducted systems with multiple indoor blowers within a single indoor section, obtain the heating minimum air volume rate using the same ''on'' blowers as used for the cooling minimum air volume rate. For systems where individual blowers regulate the speed (as opposed to the cfm) of the indoor blower, use the first section 3.1.4.5 equation for each blower individually. Sum the individual blower air volume rates to obtain the heating minimum air volume rate for the system.

3.1.4.6 Heating Intermediate Air Volume Rate.

The manufacturer must specify the heating intermediate air volume rate and the instructions for setting fan speed or controls. Calculate target minimum external static pressure as described in section 3.1.4.2.

a. For ducted heat pumps tested with an indoor blower installed that is not a constant-air-volume indoor blower, adjust for external static pressure as described in section 3.1.4.2.a for cooling minimum air volume rate.

b. For ducted heat pumps tested with constant-air-volume indoor blowers installed, conduct the $H2_V$ Test at an external static pressure that does not cause an automatic shutdown of the indoor blower or air volume rate variation Q_{Var}, defined in section 3.1.4.1.1.b, greater than 10 percent, while being as close to, but not less than the target minimum external static pressure. Additional test steps as described in section 3.9.1(c) of this appendix are required if the measured external static pressure exceeds the target value by more than 0.03 inches of water.

c. For non-ducted heat pumps, the Heating Intermediate Air Volume Rate is the air volume rate that results when the heat pump operates at an external static pressure of zero inches of water and at the fan speed selected by the controls of the unit for the $H2_V$ Test conditions.

3.1.4.7 Heating Nominal Air Volume Rate.

The manufacturer must specify the heating nominal air volume rate and the instructions for setting fan speed or controls. Calculate target minimum external static pressure as described in section 3.1.4.2. Make adjustments as described in section 3.14.6 for heating intermediate air volume rate so that the target minimum external static pressure is met or exceeded.

3.1.5 Indoor test room requirement when the air surrounding the indoor unit is not supplied from the same source as the air entering the indoor unit.

If using a test set-up where air is ducted directly from the air reconditioning apparatus to the indoor coil inlet (see Figure 2, Loop Air-Enthalpy Test Method Arrangement, of ASHRAE Standard 37–2009), maintain the dry bulb temperature within the test room within ±5.0 °F of the applicable sections 3.2 and 3.6 dry bulb temperature test condition for the air entering the indoor unit. Dew point shall be within 2 °F of the required inlet conditions.

3.1.6 Air volume rate calculations.

For all steady-state tests and for Frost Accumulation ($H2$, $H2_1$, $H2_2$, $H2_V$) tests, calculate the air volume rate through the indoor coil as specified in sections 7.7.2.1 and 7.7.2.2 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3). When using the Outdoor Air Enthalpy Method, follow sections 7.7.2.1 and 7.7.2.2 to calculate the air volume rate through the outdoor coil. To express air volume rates in terms of standard air, use:

$$\text{Equation 3-1} \qquad \overline{\dot{V}_s} = \frac{\overline{\dot{V}_{mx}}}{0.075\frac{lbm_{da}}{ft^3} * v_n' * [1+W_n]} = \frac{\overline{\dot{V}_{mx}}}{0.075\frac{lbm_{da}}{ft^3} * v_n}$$

Where,

$\overline{\dot{V}_s}$ = air volume rate of standard (dry) air, $(ft^3/min)_{da}$

$\overline{\dot{V}_{mx}}$ = air volume rate of the air-water vapor mixture, $(ft^3/min)_{mx}$

v_n' = specific volume of air-water vapor mixture at the nozzle, ft^3 per lbm of the air-water vapor mixture

W_n = humidity ratio at the nozzle, lbm of water vapor per lbm of dry air

0.075 = the density associated with standard (dry) air, (lbm/ft^3)

v_n = specific volume of the dry air portion of the mixture evaluated at the dry-bulb temperature, vapor content, and barometric pressure existing at the nozzle, ft^3 per lbm of dry air.

(**Note:** In the first printing of ASHRAE Standard 37–2009, the second IP equation for Q_{mi} should read,

$$Q_{mi} = 1097 C A_n \sqrt{P_V v_n'}$$

3.1.7 Test sequence.

Manufacturers may optionally operate the equipment under test for a ‘‘break-in’’ period, not to exceed 20 hours, prior to conducting the test method specified in this section. A manufacturer who elects to use this optional compressor break-in period in its certification testing should record this information (including the duration) in the test data underlying the certified ratings that are required to be maintained under 10 CFR 429.71. When testing a ducted unit (except if a heating-only heat pump), conduct the A or A_2 Test first to establish the Cooling Full-load Air Volume Rate. For ducted heat pumps where the Heating and Cooling Full-load Air Volume Rates are different, make the first heating mode test one that requires the Heating Full-load Air Volume Rate. For ducted heating-only heat pumps, conduct the H1 or $H1_2$ Test first to establish the Heating Full-load Air Volume Rate. When conducting an cyclic test, always conduct it immediately after the steady-state test that requires the same test conditions. For variable-speed systems, the first test using the Cooling Minimum Air Volume Rate should precede the E_V Test, and the first test using the Heating Minimum Air Volume Rate must precede the $H2_V$ Test. The test laboratory makes all other decisions on the test sequence.

3.1.8 Requirement for the air temperature distribution leaving the indoor coil.

For at least the first cooling mode test and the first heating mode test, monitor the temperature distribution of the air leaving the indoor coil using the grid of individual sensors described in sections 2.5 and 2.5.4. For the 30-minute data collection interval used to determine capacity, the maximum spread among the outlet dry bulb temperatures from any data sampling must not exceed 1.5 °F. Install the mixing devices described in section 2.5.4.2 to minimize the temperature spread.

3.1.9 Requirement for the air temperature distribution entering the outdoor coil.

Monitor the temperatures of the air entering the outdoor coil using the grid of temperature sensors described in section 2.11. For the 30-minute data collection interval used to determine capacity, the maximum difference between dry bulb temperatures measured at any of these locations must not exceed 1.5 °F.

3.1.10 Control of auxiliary resistive heating elements.

Except as noted, disable heat pump resistance elements used for heating indoor air at all times, including during defrost cycles and if they are normally regulated by a heat comfort controller. For heat pumps equipped with a heat comfort controller, enable the heat pump resistance elements only during the below-described, short test. For single-speed heat pumps covered under section 3.6.1, the short test follows the H1 or, if conducted, the H1C Test. For two-capacity heat pumps and heat pumps covered under section 3.6.2, the short test follows the $H1_2$ Test. Set the heat comfort controller to provide the maximum supply air temperature. With the heat pump operating and while maintaining the Heating Full-load Air Volume Rate, measure the temperature of the air leaving the indoor-side beginning 5 minutes after activating the heat comfort controller. Sample the outlet dry-bulb temperature at regular intervals that span 5 minutes or less. Collect data for 10 minutes, obtaining at least 3 samples. Calculate the average outlet temperature over the 10-minute interval, T_{CC}.

3.2 Cooling mode tests for different types of air conditioners and heat pumps.

3.2.1 Tests for a unit having a single-speed compressor, or a multi-circuit system, that is tested with a fixed-speed indoor blower installed, with a constant-air-volume-rate indoor blower installed, or with no indoor blower installed.

Conduct two steady-state wet coil tests, the A and B Tests. Use the two dry-coil tests, the steady-state C Test and the cyclic D Test, to determine the cooling mode cyclic degradation coefficient, C_D^c. If testing outdoor units of central air conditioners or heat pumps that are not sold with indoor units, assign C_D^c the default value of 0.2. Table 4 specifies test conditions for these four tests.

TABLE 4—COOLING MODE TEST CONDITIONS FOR UNITS HAVING A SINGLE-SPEED COMPRESSOR AND A FIXED-SPEED INDOOR BLOWER, A CONSTANT AIR VOLUME RATE INDOOR BLOWER, OR NO INDOOR BLOWER

Test description	Air entering indoor unit temperature (°F)		Air entering outdoor unit temperature (°F)		Cooling air volume rate
	Dry bulb	Wet bulb	Dry bulb	Wet bulb	
A Test—required (steady, wet coil)	80	67	95	[1]75	Cooling full-load.[2]
B Test—required (steady, wet coil)	80	67	82	[1]65	Cooling full-load.[2]
C Test—required (steady, dry coil)	80	([3])	82		Cooling full-load.[2]
D Test—required (cyclic, dry coil)	80	([3])	82		([4])

[1] The specified test condition only applies if the unit rejects condensate to the outdoor coil.

[2] Defined in section 3.1.4.1.

[3] The entering air must have a low enough moisture content so no condensate forms on the indoor coil. (It is recommended that an indoor wet-bulb temperature of 57 °F or less be used.)

[4] Maintain the airflow nozzles static pressure difference or velocity pressure during the ON period at the same pressure difference or velocity pressure as measured during the C Test.

3.2.2 Tests for a unit having a single-speed compressor where the indoor section uses a single variable-speed variable-air-volume rate indoor blower or multiple blowers.

3.2.2.1 Indoor blower capacity modulation that correlates with the outdoor dry bulb temperature or systems with a single indoor coil but multiple blowers.

Conduct four steady-state wet coil tests: The A_2, A_1, B_2, and B_1 Tests. Use the two dry-coil tests, the steady-state C_1 Test and the d D_1 Test, to determine the cooling mode cyclic degradation coefficient, $C_D{}^c$.

3.2.2.2 Indoor blower capacity modulation based on adjusting the sensible to total (S/T) cooling capacity ratio.

The testing requirements are the same as specified in section 3.2.1 and Table 4. Use a Cooling Full-load Air Volume Rate that represents a normal installation. If performed, conduct the steady-state C Test and the cyclic D Test with the unit operating in the same S/T capacity control mode as used for the B Test.

TABLE 5—COOLING MODE TEST CONDITIONS FOR UNITS WITH A SINGLE-SPEED COMPRESSOR THAT MEET THE SECTION 3.2.2.1 INDOOR UNIT REQUIREMENTS

Test description	Air entering indoor unit temperature (°F)		Air entering outdoor unit temperature (°F)		Cooling air volume rate
	Dry bulb	Wet bulb	Dry bulb	Wet bulb	
A_2 Test—required (steady, wet coil)	80	67	95	[1] 75	Cooling full-load.[2]
A_1 Test—required (steady, wet coil)	80	67	95	[1] 75	Cooling minimum.[3]
B_2 Test—required (steady, wet coil)	80	67	82	[1] 65	Cooling full-load.[2]
B_1 Test—required (steady, wet coil)	80	67	82	[1] 65	Cooling minimum.[3]
C_1 Test [4]—required (steady, dry coil)	80	([4])	82		Cooling minimum.[3]
D_1 Test [4]—required (cyclic, dry coil)	80	([4])	82	([5])	

[1] The specified test condition only applies if the unit rejects condensate to the outdoor coil.
[2] Defined in section 3.1.4.1.
[3] Defined in section 3.1.4.2.
[4] The entering air must have a low enough moisture content so no condensate forms on the indoor coil. (It is recommended that an indoor wet-bulb temperature of 57 °F or less be used.)
[5] Maintain the airflow nozzles static pressure difference or velocity pressure during the ON period at the same pressure difference or velocity pressure as measured during the C_1 Test.

3.2.3 Tests for a unit having a two-capacity compressor. (see section 1.2, Definitions)

a. Conduct four steady-state wet coil tests: The A_2, B_2, B_1, and F_1 Tests. Use the two dry-coil tests, the steady-state C_1 Test and the cyclic D_1 Test, to determine the cooling-mode cyclic-degradation coefficient, $C_D{}^c$. Table 6 specifies test conditions for these six tests.

b. For units having a variable speed indoor blower that is modulated to adjust the sensible to total (S/T) cooling capacity ratio, use Cooling Full-load and Cooling Minimum Air Volume Rates that represent a normal installation. Additionally, if conducting the dry-coil tests, operate the unit in the same S/T capacity control mode as used for the B_1 Test.

c. Test two-capacity, northern heat pumps (see section 1.2, Definitions) in the same way as a single speed heat pump with the unit operating exclusively at low compressor capacity (see section 3.2.1 and Table 4).

d. If a two-capacity air conditioner or heat pump locks out low-capacity operation at higher outdoor temperatures, then use the two dry-coil tests, the steady-state C_2 Test and the cyclic D_2 Test, to determine the cooling-mode cyclic-degradation coefficient that only applies to on/off cycling from high capacity, $C_D{}^c(k{=}2)$. The default $C_D{}^c(k{=}2)$ is the same value as determined or assigned for the low-capacity cyclic-degradation coefficient, $C_D{}^c$ [or equivalently, $C_D{}^c(k{=}1)$].

TABLE 6—COOLING MODE TEST CONDITIONS FOR UNITS HAVING A TWO-CAPACITY COMPRESSOR

Test description	Air entering indoor unit temperature (°F)		Air entering outdoor unit temperature (°F)		Compressor capacity	Cooling air volume rate
	Dry bulb	Wet bulb	Dry bulb	Wet bulb		
A_2 Test—required (steady, wet coil).	80	67	95	[1] 75	High	Cooling Full-Load.[2]
B_2 Test—required (steady, wet coil).	80	67	82	[1] 65	High	Cooling Full-Load.[2]
B_1 Test—required (steady, wet coil).	80	67	82	[1] 65	Low	Cooling Minimum.[3]
C_2 Test—required (steady, dry-coil).	80	([4])	82	High	Cooling Full-Load[2].	
D_2 Test—required (cyclic, dry-coil)	80	([4])	82	High	([5])	
C_1 Test—required (steady, dry-coil).	80	([4])	82	Low	Cooling Minimum[3].	
D_1 Test—required (cyclic, dry-coil)	80	([4])	82	Low	([6])	
F_1 Test—required (steady, wet coil).	80	67	67	[1]53.5	Low	Cooling Minimum.[3]

[1] The specified test condition only applies if the unit rejects condensate to the outdoor coil.
[2] Defined in section 3.1.4.1.
[3] Defined in section 3.1.4.2.
[4] The entering air must have a low enough moisture content so no condensate forms on the indoor coil. DOE recommends using an indoor air wet-bulb temperature of 57 °F or less.

[5] Maintain the airflow nozzle(s) static pressure difference or velocity pressure during the ON period at the same pressure or velocity as measured during the C_2 Test.
[6] Maintain the airflow nozzle(s) static pressure difference or velocity pressure during the ON period at the same pressure or velocity as measured during the C_1 Test.

3.2.4 Tests for a unit having a variable-speed compressor.

a. Conduct five steady-state wet coil tests: The A_2, E_V, B_2, B_1, and F_1 Tests. Use the two dry-coil tests, the steady-state G_1 Test and the cyclic I_1 Test, to determine the cooling mode cyclic degradation coefficient, C_D^c. Table 7 specifies test conditions for these seven tests. Determine the intermediate compressor speed cited in Table 7 using:

$$\text{Intermediate speed} = \text{Minimum speed} + \frac{\text{Maximum speed} - \text{Minimum speed}}{3}$$

where a tolerance of plus 5 percent or the next higher inverter frequency step from that calculated is allowed.

b. For units that modulate the indoor blower speed to adjust the sensible to total (S/T) cooling capacity ratio, use Cooling Full-load, Cooling Intermediate, and Cooling Minimum Air Volume Rates that represent a normal installation. Additionally, if conducting the dry-coil tests, operate the unit in the same S/T capacity control mode as used for the F_1 Test.

c. For multiple-split air conditioners and heat pumps (except where noted), the following procedures supersede the above requirements: For all Table 7 tests specified for a minimum compressor speed, at least one indoor unit must be turned off. The manufacturer shall designate the particular indoor unit(s) that is turned off. The manufacturer must also specify the compressor speed used for the Table 7 E_V Test, a cooling-mode intermediate compressor speed that falls within ¼ and ¾ of the difference between the maximum and minimum cooling-mode speeds. The manufacturer should prescribe an intermediate speed that is expected to yield the highest EER for the given E_V Test conditions and bracketed compressor speed range. The manufacturer can designate that one or more indoor units are turned off for the E_V Test.

TABLE 7—COOLING MODE TEST CONDITION FOR UNITS HAVING A VARIABLE-SPEED COMPRESSOR

Test description	Air entering indoor unit temperature (°F)		Air entering outdoor unit temperature (°F)		Compressor speed	Cooling air volume rate
	Dry bulb	Wet bulb	Dry bulb	Wet bulb		
A_2 Test—required (steady, wet coil).	80	67	95	[1] 75	Maximum	Cooling Full-Load.[2]
B_2 Test—required (steady, wet coil).	80	67	82	[1] 65	Maximum	Cooling Full-Load.[2]
E_V Test—required (steady, wet coil).	80	67	87	[1] 69	Intermediate	Cooling Intermediate.[3]
B_1 Test—required (steady, wet coil).	80	67	82	[1] 65	Minimum	Cooling Minimum.[4]
F_1 Test—required (steady, wet coil).	80	67	67	[1] 53.5	Minimum	Cooling Minimum.[4]
G_1 Test[5]—required (steady, dry-coil).	80	([6])	67	Minimum	Cooling Minimum[4].	
I_1 Test[5]—required (cyclic, dry-coil)	80	([6])	67	Minimum	([6]).	

[1] The specified test condition only applies if the unit rejects condensate to the outdoor coil.
[2] Defined in section 3.1.4.1.
[3] Defined in section 3.1.4.3.
[4] Defined in section 3.1.4.2.
[5] The entering air must have a low enough moisture content so no condensate forms on the indoor coil. DOE recommends using an indoor air wet bulb temperature of 57 °F or less.
[6] Maintain the airflow nozzle(s) static pressure difference or velocity pressure during the ON period at the same pressure difference or velocity pressure as measured during the G_1 Test.

3.2.5 Cooling mode tests for northern heat pumps with triple-capacity compressors.

Test triple-capacity, northern heat pumps for the cooling mode in the same way as specified in section 3.2.3 for units having a two-capacity compressor.

3.2.6 Tests for an air conditioner or heat pump having a single indoor unit having multiple blowers and offering two stages of compressor modulation.

Conduct the cooling mode tests specified in section 3.2.3.

3.3 Test procedures for steady-state wet coil cooling mode tests (the A, A_2, A_1, B, B_2, B_1, E_V, and F_1 Tests).

a. For the pretest interval, operate the test room reconditioning apparatus and the unit to be tested until maintaining equilibrium conditions for at least 30 minutes at the specified section 3.2 test conditions. Use the exhaust fan of the airflow measuring apparatus and, if installed, the indoor blower of the test unit to obtain and then maintain the indoor air volume rate and/or external static pressure specified for the particular test. Continuously record (see section 1.2, Definitions):

(1) The dry-bulb temperature of the air entering the indoor coil,

(2) The water vapor content of the air entering the indoor coil,

(3) The dry-bulb temperature of the air entering the outdoor coil, and

(4) For the section 2.2.4 cases where its control is required, the water vapor content of the air entering the outdoor coil.

Refer to section 3.11 for additional requirements that depend on the selected secondary test method.

b. After satisfying the pretest equilibrium requirements, make the measurements specified in Table 3 of ASHRAE Standard 37–2009 for the Indoor Air Enthalpy method and the user-selected secondary method. Make said Table 3 measurements at equal intervals that span 5 minutes or less. Continue data sampling until reaching a 30-minute period (*e.g.,* four consecutive 10-minute samples) where the test tolerances specified in Table 8 are satisfied. For those continuously recorded parameters, use the entire data set from the 30-minute interval to evaluate Table 8 compliance. Determine the average electrical power consumption of the air conditioner or heat pump over the same 30-minute interval.

c. Calculate indoor-side total cooling capacity and sensible cooling capacity as specified in sections 7.3.3.1 and 7.3.3.3 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3). Do not adjust the parameters used in calculating capacity for the permitted variations in test conditions. Evaluate air enthalpies based on the measured barometric pressure. Use the values of the specific heat of air given in section 7.3.3.1 for calculation of the sensible cooling capacities. Assign the average total space cooling capacity, average sensible cooling capacity, and electrical power consumption over the 30-minute data collection interval to the variables $\dot{Q}_c^k(T)$, $\dot{Q}_{sc}^k(T)$ and $\dot{E}_c^k(T)$, respectively. For these three variables, replace the "T" with the nominal outdoor temperature at which the test was conducted. The superscript k is used only when testing multi-capacity units. Use the superscript k=2 to denote a test with the unit operating at high capacity or maximum speed, k=1 to denote low capacity or minimum speed, and k=v to denote the intermediate speed.

d. For units tested without an indoor blower installed, decrease $\dot{Q}_c^k(T)$ by

$$\frac{1250\ Btu/h}{1000\ scfm} * \bar{\dot{V}}_s$$

and increase $\dot{E}_c^k(T)$ by,

$$\frac{365\ W}{1000\ scfm} * \bar{\dot{V}}_s$$

where $\dot{V}_s$ is the average measured indoor air volume rate expressed in units of cubic feet per minute of standard air (scfm).

TABLE 8—TEST OPERATING AND TEST CONDITION TOLERANCES FOR SECTION 3.3 STEADY-STATE WET COIL COOLING MODE TESTS AND SECTION 3.4 DRY COIL COOLING MODE TESTS

	Test operating tolerance [1]	Test condition tolerance [1]
Indoor dry-bulb, °F		
Entering temperature	2.0	0.5
Leaving temperature	2.0	
Indoor wet-bulb, °F		
Entering temperature	1.0	[2] 0.3
Leaving temperature	[2] 1.0	
Outdoor dry-bulb, °F		
Entering temperature	2.0	0.5
Leaving temperature	[3] 2.0	
Outdoor wet-bulb, °F		
Entering temperature	1.0	[4] 0.3
Leaving temperature	[3] 1.0	
External resistance to airflow, inches of water	0.12	[5] 0.02
Electrical voltage, % of rdg.	2.0	1.5
Nozzle pressure drop, % of rdg.	8.0	

[1] See section 1.2, Definitions.
[2] Only applies during wet coil tests; does not apply during steady-state, dry coil cooling mode tests.
[3] Only applies when using the Outdoor Air Enthalpy Method.
[4] Only applies during wet coil cooling mode tests where the unit rejects condensate to the outdoor coil.
[5] Only applies when testing non-ducted units.

e. For air conditioners and heat pumps having a constant-air-volume-rate indoor blower, the five additional steps listed below are required if the average of the measured external static pressures exceeds the applicable sections 3.1.4 minimum (or target) external static pressure (ΔP_{min}) by 0.03 inches of water or more.

1. Measure the average power consumption of the indoor blower motor ($\dot{E}_{fan,1}$) and record the corresponding external static pressure (ΔP_1) during or immediately following the 30-minute interval used for determining capacity.

2. After completing the 30-minute interval and while maintaining the same test conditions, adjust the exhaust fan of the airflow measuring apparatus until the external static pressure increases to approximately $\Delta P_1 + (\Delta P_1 - \Delta P_{min})$.

3. After re-establishing steady readings of the fan motor power and external static pressure, determine average values for the indoor blower power ($\dot{E}_{fan,2}$) and the external static pressure (ΔP_2) by making measurements over a 5-minute interval.

4. Approximate the average power consumption of the indoor blower motor at ΔP_{min} using linear extrapolation:

$$\dot{E}_{fan,\min} = \frac{\dot{E}_{fan,2} - \dot{E}_{fan,1}}{\Delta P_2 - \Delta P_1}(\Delta P_{\min} - \Delta P_1) + \dot{E}_{fan,1}$$

5. Increase the total space cooling capacity, $\dot{Q}_c^k(T)$, by the quantity ($\dot{E}_{fan,1} - \dot{E}_{fan,min}$), when expressed on a Btu/h basis. Decrease the total electrical power, $\dot{E}_c^k(T)$, by the same fan power difference, now expressed in watts.

3.4 Test procedures for the steady-state dry-coil cooling-mode tests (the C, C_1, C_2, and G_1 Tests).

a. Except for the modifications noted in this section, conduct the steady-state dry coil cooling mode tests as specified in section 3.3 for wet coil tests. Prior to recording data during the steady-state dry coil test, operate the unit at least one hour after achieving dry coil conditions. Drain the drain pan and plug the drain opening. Thereafter, the drain pan should remain completely dry.

b. Denote the resulting total space cooling capacity and electrical power derived from the test as $\dot{Q}_{ss,dry}$ and $\dot{E}_{ss,dry}$. With regard to a section 3.3 deviation, do not adjust $\dot{Q}_{ss,dry}$ for duct losses (*i.e.,* do not apply section 7.3.3.3 of ASHRAE Standard 37–2009). In preparing for the section 3.5 cyclic tests, record the average indoor-side air volume rate, $\acute{V}$, specific heat of the air, Cp,a (expressed on dry air basis), specific volume of the air at the nozzles, v'_n, humidity ratio at the nozzles, W_n, and either pressure difference or velocity pressure for the flow nozzles. For units having a variable-speed indoor fan (that provides either a constant or variable air volume rate) that will or may be tested during the cyclic dry coil cooling mode test with the indoor fan turned off (see section

3.5), include the electrical power used by the indoor fan motor among the recorded parameters from the 30-minute test.

c. If the temperature sensors used to provide the primary measurement of the indoor-side dry bulb temperature difference during the steady-state dry-coil test and the subsequent cyclic dry-coil test are different, include measurements of the latter sensors among the regularly sampled data. Beginning at the start of the 30-minute data collection period, measure and compute the indoor-side air dry-bulb temperature difference using both sets of instrumentation, ΔT (Set SS) and ΔT (Set CYC), for each equally spaced data sample. If using a consistent data sampling rate that is less than 1 minute, calculate and record minutely averages for the two temperature differences. If using a consistent sampling rate of one minute or more, calculate and record the two temperature differences from each data sample. After having recorded the seventh (i=7) set of temperature differences, calculate the following ratio using the first seven sets of values:

$$F_{CD} = \frac{1}{7}\sum_{i-6}^{i} \frac{\Delta T(Set\ SS)}{\Delta T(Set\ CYC)}$$

Each time a subsequent set of temperature differences is recorded (if sampling more frequently than every 5 minutes), calculate F_{CD} using the most recent seven sets of values. Continue these calculations until the 30-minute period is completed or until a value for F_{CD} is calculated that falls outside the allowable range of 0.94–1.06. If the latter occurs, immediately suspend the test and identify the cause for the disparity in the two temperature difference measurements. Recalibration of one or both sets of instrumentation may be required. If all the values for F_{CD} are within the allowable range, save the final value of the ratio from the 30-minute test as F_{CD}*. If the temperature sensors used to provide the primary measurement of the indoor-side dry bulb temperature difference during the steady-state dry-coil test and the subsequent cyclic dry-coil test are the same, set F_{CD}*= 1.

3.5 Test procedures for the cyclic dry-coil cooling-mode tests (the D, D_1, D_2, and I_1 Tests).

a. After completing the steady-state dry-coil test, remove the Outdoor Air Enthalpy method test apparatus, if connected, and begin manual OFF/ON cycling of the unit's compressor. The test set-up should otherwise be identical to the set-up used during the steady-state dry coil test. When testing heat pumps, leave the reversing valve during the compressor OFF cycles in the same position as used for the compressor ON cycles, unless automatically changed by the controls of the unit. For units having a variable-speed indoor blower, the manufacturer has the option of electing at the outset whether to conduct the cyclic test with the indoor blower enabled or disabled. Always revert to testing with the indoor blower disabled if cyclic testing with the fan enabled is unsuccessful.

b. For units having a single-speed or two-capacity compressor, cycle the compressor OFF for 24 minutes and then ON for 6 minutes ($\Delta\tau_{cyc,dry}$ = 0.5 hours). For units having a variable-speed compressor, cycle the compressor OFF for 48 minutes and then ON for 12 minutes ($\Delta\tau_{cyc,dry}$ = 1.0 hours). Repeat the OFF/ON compressor cycling pattern until the test is completed. Allow the controls of the unit to regulate cycling of the outdoor fan. If an upturned duct is used, measure the dry-bulb temperature at the inlet of the device at least once every minute and ensure that its test operating tolerance is within 1.0 °F for each compressor OFF period.

c. Sections 3.5.1 and 3.5.2 specify airflow requirements through the indoor coil of ducted and non-ducted systems, respectively. In all cases, use the exhaust fan of the airflow measuring apparatus (covered under section 2.6) along with the indoor blower of the unit, if installed and operating, to approximate a step response in the indoor coil airflow. Regulate the exhaust fan to quickly obtain and then maintain the flow nozzle static pressure difference or velocity pressure at the same value as was measured during the steady-state dry coil test. The pressure difference or velocity pressure should be within 2 percent of the value from the steady-state dry coil test within 15 seconds after airflow initiation. For units having a variable-speed indoor blower that ramps when cycling on and/or off, use the exhaust fan of the airflow measuring apparatus to impose a step response that begins at the initiation of ramp up and ends at the termination of ramp down.

d. For units having a variable-speed indoor blower, conduct the cyclic dry coil test using the pull-thru approach described below if any of the following occur when testing with the fan operating:

(1) The test unit automatically cycles off;

(2) Its blower motor reverses; or

(3) The unit operates for more than 30 seconds at an external static pressure that is 0.1 inches of water or more higher than the value measured during the prior steady-state test.

For the pull-thru approach, disable the indoor blower and use the exhaust fan of the airflow measuring apparatus to generate the specified flow nozzles static pressure difference or velocity pressure. If the exhaust fan cannot deliver the required pressure difference because of resistance created by the unpowered blower, temporarily remove the blower.

e. Conduct a minimum of six complete compressor OFF/ON cycles for a unit with a single-speed or two-speed compressor, and a minimum of five complete compressor OFF/ON cycles for a unit with a variable speed compressor. The first three cycles for a unit with a single-speed compressor or two-speed compressor and the first two cycles for a unit with a unit with a variable speed compressor are the warm-up period—the later cycles are called the active cycles. Calculate the degradation coefficient C_D for each complete active cycle if the test tolerances given in Table 9 are satisfied. If the average C_D for the first three active cycles is within 0.02 of the average C_D for the first two active cycles, use the average C_D of the three active cycles as the final result. If these averages differ by more than 0.02, continue the test to get C_D for the fourth cycle. If the average C_D of the last three cycles is lower than or no more than 0.02 greater than the average C_D of the first three cycles, use the average C_D of all four active cycles as the final result. Otherwise, continue the test with a fifth cycle. If the average C_D of the last three cycles is 0.02 higher than the average for the previous three cycles, use the default C_D, otherwise use the average C_D of all five active cycles. If the test tolerances given in Table 9 are not satisfied, use default C_D value. The default C_D value for cooling is 0.2.

f. With regard to the Table 9 parameters, continuously record the dry-bulb temperature of the air entering the indoor and outdoor coils during periods when air flows through the respective coils. Sample the water vapor content of the indoor coil inlet air at least every 2 minutes during periods when air flows through the coil. Record external static pressure and the air volume rate indicator (either nozzle pressure difference or velocity pressure) at least every minute during the interval that air flows through the indoor coil. (These regular measurements of the airflow rate indicator are in addition to the required measurement at 15 seconds after flow initiation.) Sample the electrical voltage at least every 2 minutes beginning 30 seconds after compressor start-up. Continue until the compressor, the outdoor fan, and the indoor blower (if it is installed and operating) cycle off.

g. For ducted units, continuously record the dry-bulb temperature of the air entering (as noted above) and leaving the indoor coil. Or if using a thermopile, continuously record the difference between these two temperatures during the interval that air flows through the indoor coil. For non-ducted units, make the same dry-bulb temperature measurements beginning when the compressor cycles on and ending when indoor coil airflow ceases.

h. Integrate the electrical power over complete cycles of length $\Delta\tau_{cyc,dry}$. For ducted units tested with an indoor blower installed and operating, integrate electrical power from indoor blower OFF to indoor blower OFF. For all other ducted units and for non-ducted units, integrate electrical power from compressor OFF to compressor OFF. (Some cyclic tests will use the same data collection intervals to determine the electrical energy and the total space cooling. For other units, terminate data collection used to determine the electrical energy before terminating data collection used to determine total space cooling.)

TABLE 9—TEST OPERATING AND TEST CONDITION TOLERANCES FOR CYCLIC DRY COIL COOLING MODE TESTS

	Test operating tolerance [1]	Test condition tolerance [1]
Indoor entering dry-bulb temperature [2], °F	2.0	0.5
Indoor entering wet-bulb temperature, °F		([3])
Outdoor entering dry-bulb temperature [2], °F	2.0	0.5
External resistance to airflow [2], inches of water	0.12	
Airflow nozzle pressure difference or velocity pressure [2], % of reading	8.0	[4]2.0
Electrical voltage [5], % of rdg.	2.0	1.5

[1] See section 1.2, Definitions.
[2] Applies during the interval that air flows through the indoor (outdoor) coil except for the first 30 seconds after flow initiation. For units having a variable-speed indoor blower that ramps, the tolerances listed for the external resistance to airflow apply from 30 seconds after achieving full speed until ramp down begins.
[3] Shall at no time exceed a wet-bulb temperature that results in condensate forming on the indoor coil.
[4] The test condition shall be the average nozzle pressure difference or velocity pressure measured during the steady-state dry coil test.
[5] Applies during the interval when at least one of the following—the compressor, the outdoor fan, or, if applicable, the indoor blower—are operating except for the first 30 seconds after compressor start-up.

i. If the Table 9 tolerances are satisfied over the complete cycle, record the measured electrical energy consumption as $e_{cyc,dry}$ and express it in units of watt-hours. Calculate the total space cooling delivered, $q_{cyc,dry}$, in units of Btu using,

$$q_{cyc,dry} = \frac{60*\overline{\dot{V}}*C_{p,a}*\Gamma}{[v_n'*(1+W_n)]} = \frac{60*\overline{\dot{V}}*C_{p,a}*\Gamma}{v_n} \quad \text{and} \quad \Gamma = F_{CD}^{*}\int_{\tau_1}^{\tau_2}[T_{a1}(\tau) - T_{a2}(\tau)]\delta\tau,\ hr * {}^{\circ}\mathrm{F}$$

where $\overline{\dot{V}}$, $C_{p,a}$, v_n' (or v_n), W_n, and F_{CD}^* are the values recorded during the section 3.4 dry coil steady-state test and

$T_{a1}(\tau)$ = dry bulb temperature of the air entering the indoor coil at time τ, °F.

$T_{a2}(\tau)$ = dry bulb temperature of the air leaving the indoor coil at time τ, °F.

τ_1 = for ducted units, the elapsed time when airflow is initiated through the indoor coil; for non-ducted units, the elapsed time when the compressor is cycled on, hr.

τ_2 = the elapsed time when indoor coil airflow ceases, hr.

3.5.1 Procedures when testing ducted systems.

The automatic controls that are normally installed with the test unit must govern the OFF/ON cycling of the air moving equipment on the indoor side (exhaust fan of the airflow measuring apparatus and, if installed, the indoor blower of the test unit). For example, for ducted units tested without an indoor blower installed but rated based on using a fan time delay relay, control the indoor coil airflow according to the rated ON and/or OFF delays provided by the relay. For ducted units having a variable-speed indoor blower that has been disabled (and possibly removed), start and stop the indoor airflow at the same instances as if the fan were enabled. For all other ducted units tested without an indoor blower installed, cycle the indoor coil airflow in unison with the cycling of the compressor. If air damper boxes are used, close them on the inlet and outlet side during the OFF period. Airflow through the indoor coil should stop within 3 seconds after the automatic controls of the test unit (act to) de-energize the indoor blower. For ducted units tested without an indoor blower installed (excluding the special case where a variable-speed fan is temporarily removed), increase $e_{cyc,dry}$ by the quantity,

Equation 3.5-2. $$\frac{365\,W}{1000\,scfm} * \overline{\dot{V}}_s * [\tau_2 - \tau_1]$$

and decrease $q_{cyc,dry}$ by,

Equation 3.5-3. $$\frac{1250\,Btu/h}{1000\,scfm} * \overline{\dot{V}}_s * [\tau_2 - \tau_1]$$

where $\overline{\dot{V}}_s$ is the average indoor air volume rate from the section 3.4 dry coil steady-state test and is expressed in units of cubic feet per minute of standard air (scfm). For units having a variable-speed indoor blower that is disabled during the cyclic test, increase $e_{cyc,dry}$ and decrease $q_{cyc,dry}$ based on:

a. The product of $[\tau_2 - \tau_1]$ and the indoor blower power measured during or following the dry coil steady-state test; or,

b. The following algorithm if the indoor blower ramps its speed when cycling.

1. Measure the electrical power consumed by the variable-speed indoor blower at a minimum of three operating conditions: At the speed/air volume rate/external static pressure that was measured during the steady-state test, at operating conditions associated with the midpoint of the ramp-up interval, and at conditions associated with the midpoint of the ramp-down interval. For these measurements, the tolerances on the airflow volume or the external static pressure are the same as required for the section 3.4 steady-state test.

2. For each case, determine the fan power from measurements made over a minimum of 5 minutes.

3. Approximate the electrical energy consumption of the indoor blower if it had operated during the cyclic test using all three power measurements. Assume a linear profile during the ramp intervals. The manufacturer must provide the durations of the ramp-up and ramp-down intervals. If the test setup instructions included with the unit by the manufacturer specifies a ramp interval that exceeds 45 seconds, use a 45-second ramp interval nonetheless when estimating the fan energy.

3.5.2 Procedures when testing non-ducted systems.

Do not use airflow prevention devices when conducting cyclic tests on non-ducted units. Until the last OFF/ON compressor cycle, airflow through the indoor coil must cycle off and on in unison with the compressor. For the last OFF/ON compressor cycle—the one used to determine $e_{cyc,dry}$ and $q_{cyc,dry}$—use the exhaust fan of the airflow measuring apparatus and the indoor blower of the test unit to have indoor airflow start 3 minutes prior to compressor cut-on and end three minutes after compressor cutoff. Subtract the electrical energy used by the indoor blower during the 3 minutes prior to compressor cut-on from the integrated electrical energy, $e_{cyc,dry}$. Add the electrical energy used by the indoor blower during the 3 minutes after compressor cutoff to the integrated cooling capacity, $q_{cyc,dry}$. For the case where the non-ducted unit uses a variable-speed indoor blower which is disabled during the cyclic test, correct $e_{cyc,dry}$ and $q_{cyc,dry}$ using the same approach as prescribed in section 3.5.1 for ducted units having a disabled variable-speed indoor blower.

3.5.3 Cooling-mode cyclic-degradation coefficient calculation.

Use the two dry-coil tests to determine the cooling-mode cyclic-degradation coefficient, C_D^c. Append ‘‘(k=2)’’ to the coefficient if it corresponds to a two-capacity unit cycling at high capacity. The default value for two-capacity units cycling at high capacity, however, is the low-capacity coefficient, *i.e.,* $C_D^c(k=2) = C_D^c$. Evaluate C_D^c using the above results and those from the section 3.4 dry-coil steady-state test.

$$C_D^c = \frac{1 - \frac{EER_{cyc,dry}}{EER_{ss,dry}}}{1 - CLF}$$

where,

$$EER_{cyc,dry} = \frac{q_{cyc,dry}}{e_{cyc,dry}}$$

the average energy efficiency ratio during the cyclic dry coil cooling mode test, Btu/W·h

$$EER_{ss,dry} = \frac{\dot{Q}_{ss,dry}}{\dot{E}_{ss,dry}}$$

the average energy efficiency ratio during the steady-state dry coil cooling mode test, Btu/W·h

$$CLF = \frac{q_{cyc,dry}}{Q_{ss,dry} * \Delta\tau_{cyc,dry}}$$

the cooling load factor dimensionless

Round the calculated value for C_D^c to the nearest 0.01. If C_D^c is negative, then set it equal to zero.

3.6 Heating mode tests for different types of heat pumps, including heating-only heat pumps.

3.6.1 Tests for a heat pump having a single-speed compressor that is tested with a fixed speed indoor blower installed, with a constant-air-volume-rate indoor blower installed, or with no indoor blower installed. Conduct the High Temperature Cyclic (H1C) Test to determine the heating mode cyclic-degradation coefficient, C_D^h. Test conditions for the four tests are specified in Table 10.

TABLE 10—HEATING MODE TEST CONDITIONS FOR UNITS HAVING A SINGLE-SPEED COMPRESSOR AND A FIXED-SPEED INDOOR BLOWER, A CONSTANT AIR VOLUME RATE INDOOR BLOWER, OR NO INDOOR BLOWER

Test description	Air entering indoor unit temperature (°F)		Air entering outdoor unit temperature (°F)		Heating air volume rate
	Dry bulb	Wet bulb	Dry bulb	Wet bulb	
H1 Test (required, steady)	70	60(max)	47	43	Heating Full-load.[1]
H1C Test (required, cyclic)	70	60(max)	47	43	([2]).
H2 Test (required)	70	60(max)	35	33	Heating Full-load.[1]
H3 Test (required, steady)	70	60(max)	17	15	Heating Full-load.[1]

[1] Defined in section 3.1.4.4.

[2] Maintain the airflow nozzles static pressure difference or velocity pressure during the ON period at the same pressure difference or velocity pressure as measured during the H1 Test.

3.6.2 Tests for a heat pump having a single-speed compressor and a single indoor unit having either (1) a variable speed, variable-air-rate indoor blower whose capacity modulation correlates with outdoor dry bulb temperature or (2) multiple blowers. Conduct five tests: Two High Temperature Tests ($H1_2$ and $H1_1$), one Frost Accumulation Test ($H2_2$), and two Low Temperature Tests ($H3_2$ and $H3_1$). Conducting an additional Frost Accumulation Test ($H2_1$) is optional. Conduct the High Temperature Cyclic ($H1C_1$) Test to determine the heating mode cyclic-degradation coefficient, C_D^h. Test conditions for the seven tests are specified in Table 11. If the optional $H2_1$ Test is not performed, use the following equations to approximate the capacity and electrical power of the heat pump at the $H2_1$ test conditions:

$$\dot{Q}_h^{k=1}(35) = QR_h^{k=2}(35) * \left\{\dot{Q}_h^{k=1}(17) + 0.6 * \left[\dot{Q}_h^{k=1}(47) - \dot{Q}_h^{k=1}(17)\right]\right\}$$

$$\dot{E}_h^{k=1}(35) = PR_h^{k=2}(35) * \left\{\dot{E}_h^{k=1}(17) + 0.6 * \left[\dot{E}_h^{k=1}(47) - \dot{E}_h^{k=1}(17)\right]\right\}$$

where,

$$\dot{Q}R_h^{k=2}(35) = \frac{\dot{Q}_h^{k=2}(35)}{\dot{Q}^{k=2}(17) + 0.6 * [\dot{Q}_h^{k=2}(47) - \dot{Q}_h^{k=2}(17)]}$$

$$PR_h^{k=2}(35) = \frac{\dot{E}_h^{k=2}(35)}{\dot{E}_h^{k=2}(17) + 0.6 * \left[\dot{E}_h^{k=2}(47) - \dot{E}_h^{k=2}(17)\right]}$$

The quantities $\dot{Q}_h^{k=2}(47)$, $\dot{E}_h^{k=2}(47)$, $\dot{Q}_h^{k=1}(47)$, and $\dot{E}_h^{k=1}(47)$ are determined from the $H1_2$ and $H1_1$ Tests and evaluated as specified in section 3.7; the quantities $\dot{Q}_h^{k=2}(35)$ and $\dot{E}_h^{k=2}(35)$ are determined from the $H2_2$ Test and evaluated as specified in section 3.9; and the quantities $\dot{Q}_h^{k=2}(17)$, $\dot{E}_h^{k=2}(17)$, $Q_h^{k=1}(17)$, and $\dot{E}_h^{k=1}(17)$, are determined from the $H3_2$ and $H3_1$ Tests and evaluated as specified in section 3.10.

TABLE 11—HEATING MODE TEST CONDITIONS FOR UNITS WITH A SINGLE-SPEED COMPRESSOR THAT MEET THE SECTION 3.6.2 INDOOR UNIT REQUIREMENTS

Test description	Air entering indoor unit temperature (°F)		Air entering outdoor unit temperature (°F)		Heating air volume rate
	Dry bulb	Wet bulb	Dry bulb	Wet bulb	
$H1_2$ Test (required, steady)	70	60(max)	47	43	Heating Full-load.[1]
$H1_1$ Test (required, steady)	70	60(max)	47	43	Heating Minimum.[2]
$H1C_1$ Test (required, cyclic)	70	60(max)	47	43	([3])
$H2_2$ Test (required)	70	60(max)	35	33	Heating Full-load.[1]
$H2_1$ Test (optional)	70	60(max)	35	33	Heating Minimum.[2]
$H3_2$ Test (required, steady)	70	60(max)	17	15	Heating Full-load.[1]
$H3_1$ Test (required, steady)	70	60(max)	17	15	Heating Minimum.[2]

[1] Defined in section 3.1.4.4.
[2] Defined in section 3.1.4.5.
[3] Maintain the airflow nozzles static pressure difference or velocity pressure during the ON period at the same pressure difference or velocity pressure as measured during the $H1_1$ Test.

3.6.3 Tests for a heat pump having a two-capacity compressor (see section 1.2, Definitions), including two-capacity, northern heat pumps (see section 1.2, Definitions).

a. Conduct one Maximum Temperature Test ($H0_1$), two High Temperature Tests ($H1_2$and $H1_1$), one Frost Accumulation Test ($H2_2$), and one Low Temperature Test ($H3_2$). Conduct an additional Frost Accumulation Test ($H2_1$) and Low Temperature Test ($H3_1$) if both of the following conditions exist:

1. Knowledge of the heat pump's capacity and electrical power at low compressor capacity for outdoor temperatures of 37 °F and less is needed to complete the section 4.2.3 seasonal performance calculations; and

2. The heat pump's controls allow low-capacity operation at outdoor temperatures of 37 °F and less.

If the above two conditions are met, an alternative to conducting the $H2_1$ Frost Accumulation is to use the following equations to approximate the capacity and electrical power:

$$\dot{Q}_h^{k=1}(35) = 0.90 * \left\{\dot{Q}_h^{k=1}(17) + 0.6 * \left[\dot{Q}_h^{k=1}(47) - \dot{Q}_h^{k=1}(17)\right]\right\}$$

$$\dot{E}_h^{k=1}(35) = 0.985 * \left\{\dot{E}_h^{k=1}(17) + 0.6 * \left[\dot{E}_h^{k=1}(47) - \dot{E}_h^{k=1}(17)\right]\right\}$$

Determine the quantities $\dot{Q}_h^{k=1}$ (47) and $\dot{E}_h^{k=1}$ (47) from the $H1_1$ Test and evaluate them according to Section 3.7. Determine the quantities $\dot{Q}_h^{k=1}$ (17) and $\dot{E}_h^{k=1}$ (17) from the $H3_1$ Test and evaluate them according to Section 3.10.

b. Conduct the High Temperature Cyclic Test ($H1C_1$) to determine the heating mode cyclic-degradation coefficient, C_D^h. If a two-capacity heat pump locks out low capacity operation at lower outdoor temperatures, conduct the High Temperature Cyclic Test ($H1C_2$) to determine the high-capacity heating mode cyclic-degradation coefficient, C_D^h (k=2). The default C_D^h (k=2) is the same value as determined or assigned for the low-capacity cyclic-degradation coefficient, C_D^h [or equivalently, C_D^h (k=1)]. Table 12 specifies test conditions for these nine tests.

TABLE 12—HEATING MODE TEST CONDITIONS FOR UNITS HAVING A TWO-CAPACITY COMPRESSOR

Test description	Air entering indoor unit temperature (°F)		Air entering outdoor unit temperature (°F)		Compressor capacity	Heating air volume rate
	Dry bulb	Wet bulb	Dry bulb	Wet bulb		
$H0_1$ Test (required, steady)	70	60 (max)	62	56.5	Low	Heating Minimum.[1]
$H1_2$ Test (required, steady)	70	60 (max)	47	43	High	Heating Full-Load.[2]
$H1C_2$ Test (required,[7] cyclic)	70	60 (max)	47	43	High	([3]).
$H1_1$ Test (required)	70	60 (max)	47	43	Low	Heating Minimum.[1]
$H1C_1$ Test (required, cyclic)	70	60 (max)	47	43	Low	([4]).
$H2_2$ Test (required)	70	60 (max)	35	33	High	Heating Full-Load.[2]
$H2_1$ Test[5 6] (required)	70	60 (max)	35	33	Low	Heating Minimum.[1]
$H3_2$ Test (required, steady)	70	60 (max)	17	15	High	Heating Full-Load.[2]

TABLE 12—HEATING MODE TEST CONDITIONS FOR UNITS HAVING A TWO-CAPACITY COMPRESSOR—Continued

Test description	Air entering indoor unit temperature (°F)		Air entering outdoor unit temperature (°F)		Compressor capacity	Heating air volume rate
	Dry bulb	Wet bulb	Dry bulb	Wet bulb		
H3$_1$ Test[5] (required, steady)	70	60 (max)	17	15	Low	Heating Minimum.[1]

[1] Defined in section 3.1.4.5.
[2] Defined in section 3.1.4.4.
[3] Maintain the airflow nozzle(s) static pressure difference or velocity pressure during the ON period at the same pressure or velocity as measured during the *H1*$_2$ Test.
[4] Maintain the airflow nozzle(s) static pressure difference or velocity pressure during the ON period at the same pressure or velocity as measured during the *H1*$_1$ Test.
[5] Required only if the heat pump's performance when operating at low compressor capacity and outdoor temperatures less than 37 °F is needed to complete the section 4.2.3 *HSPF* calculations.
[6] If table note #5 applies, the section 3.6.3 equations for $\dot{Q}_h^{k=1}$ (35) and $\dot{E}_h^{k=1}$ (17) may be used in lieu of conducting the H2$_1$ Test.
[7] Required only if the heat pump locks out low capacity operation at lower outdoor temperatures.

3.6.4 Tests for a heat pump having a variable-speed compressor.

a. Conduct one Maximum Temperature Test (H0$_1$), two High Temperature Tests (H1$_2$ and H1$_1$), one Frost Accumulation Test (H2$_V$), and one Low Temperature Test (H3$_2$). Conducting one or both of the following tests is optional: An additional High Temperature Test (H1$_N$) and an additional Frost Accumulation Test (H2$_2$). Conduct the Maximum Temperature Cyclic (H0C$_1$) Test to determine the heating mode cyclic-degradation coefficient, C_D^h. Test conditions for the eight tests are specified in Table 13. Determine the intermediate compressor speed cited in Table 13 using the heating mode maximum and minimum compressors speeds and:

$$\text{Intermediate speed} = \text{Minimum speed} + \frac{\text{Maximum speed} - \text{Minimum speed}}{3}$$

Where a tolerance of plus 5 percent or the next higher inverter frequency step from that calculated is allowed. If the H2$_2$Test is not done, use the following equations to approximate the capacity and electrical power at the H2$_2$ test conditions:

$$\dot{Q}_h^{k=2}(35) = 0.90 * \left\{\dot{Q}_h^{k=2}(17) + 0.6 * \left[\dot{Q}_h^{k=2}(47) - \dot{Q}_h^{k=2}(17)\right]\right\}$$

$$\dot{E}_h^{k=2}(35) = 0.985 * \left\{\dot{E}_h^{k=2}(17) + 0.6 * \left[\dot{E}_h^{k=2}(47) - \dot{E}_h^{k=2}(17)\right]\right\}$$

b. Determine the quantities $\dot{Q}_h^{k=2}(47)$ and from $\dot{E}_h^{k=2}(47)$ from the H1$_2$ Test and evaluate them according to section 3.7. Determine the quantities $\dot{Q}_h^{k=2}(17)$ and $\dot{E}_h^{k=2}(17)$ from the H3$_2$ Test and evaluate them according to section 3.10. For heat pumps where the heating mode maximum compressor speed exceeds its cooling mode maximum compressor speed, conduct the H1$_N$ Test if the manufacturer requests it. If the H1$_N$ Test is done, operate the heat pump's compressor at the same speed as the speed used for the cooling mode A$_2$ Test. Refer to the last sentence of section 4.2 to see how the results of the H1$_N$ Test may be used in calculating the heating seasonal performance factor.

TABLE 13—HEATING MODE TEST CONDITIONS FOR UNITS HAVING A VARIABLE-SPEED COMPRESSOR

Test description	Air entering indoor unit temperature (°F)		Air entering outdoor unit temperature (°F)		Compressor speed	Heating air volume rate
	Dry bulb	Wet bulb	Dry bulb	Wet bulb		
H0$_1$ Test (required, steady)	70	60 (max)	62	56.5	Minimum	Heating Minimum.[1]
H0C$_1$ Test (required, steady)	70	60 (max)	62	56.5	Minimum	([2]).
H1$_2$ Test (required, steady)	70	60 (max)	47	43	Maximum	Heating Full-Load.[3]
H1$_1$ Test (required, steady)	70	60 (max)	47	43	Minimum	Heating Minimum.[1]
H1$_N$ Test (optional, steady)	70	60 (max)	47	43	Cooling Mode Maximum.	Heating Nominal.[4]
H2$_2$ Test (optional)	70	60 (max)	35	33	Maximum	Heating Full-Load.[3]
H2$_V$ Test (required)	70	60 (max)	35	33	Intermediate	Heating Intermediate.[5]
H3$_2$ Test (required, steady)	70	60 (max)	17	15	Maximum	Heating Full-Load.[3]

[1] Defined in section 3.1.4.5.
[2] Maintain the airflow nozzle(s) static pressure difference or velocity pressure during an ON period at the same pressure or velocity as measured during the H0$_1$ Test.

[3] Defined in section 3.1.4.4.
[4] Defined in section 3.1.4.7.
[5] Defined in section 3.1.4.6.

c. For multiple-split heat pumps (only), the following procedures supersede the above requirements. For all Table 13 tests specified for a minimum compressor speed, at least one indoor unit must be turned off. The manufacturer shall designate the particular indoor unit(s) that is turned off. The manufacturer must also specify the compressor speed used for the Table 13 $H2_V$ Test, a heating mode intermediate compressor speed that falls within ¼ and ¾ of the difference between the maximum and minimum heating mode speeds. The manufacturer should prescribe an intermediate speed that is expected to yield the highest COP for the given $H2_V$ Test conditions and bracketed compressor speed range. The manufacturer can designate that one or more specific indoor units are turned off for the $H2_V$ Test.

3.6.5 Additional test for a heat pump having a heat comfort controller.

Test any heat pump that has a heat comfort controller (see section 1.2, Definitions) according to section 3.6.1, 3.6.2, or 3.6.3, whichever applies, with the heat comfort controller disabled. Additionally, conduct the abbreviated test described in section 3.1.9 with the heat comfort controller active to determine the system's maximum supply air temperature. (Note: Heat pumps having a variable speed compressor and a heat comfort controller are not covered in the test procedure at this time.)

3.6.6 Heating mode tests for northern heat pumps with triple-capacity compressors.

Test triple-capacity, northern heat pumps for the heating mode as follows:

(a) Conduct one maximum-temperature test ($H0_1$), two high-temperature tests ($H1_2$ and $H1_1$), one Frost Accumulation test ($H2_2$), two low-temperature tests ($H3_2$, $H3_3$), and one minimum-temperature test ($H4_3$). Conduct an additional Frost Accumulation test ($H2_1$) and low- temperature test ($H3_1$) if both of the following conditions exist: (1) Knowledge of the heat pump's capacity and electrical power at low compressor capacity for outdoor temperatures of 37 °F and less is needed to complete the section 4.2.6 seasonal performance calculations; and (2) the heat pump's controls allow low-capacity operation at outdoor temperatures of 37 °F and less. If the above two conditions are met, an alternative to conducting the $H2_1$ Frost Accumulation Test to determine $\dot{Q}_h^{k=1}(35)$ and $\dot{E}_h^{k=1}(35)$ is to use the following equations to approximate this capacity and electrical power:

$$\dot{Q}_h^{k=1}(35) = 0.90 * \left\{\dot{Q}_h^{k=1}(17) + 0.6 * \left[\dot{Q}_h^{k=1}(47) - \dot{Q}_h^{k=1}(17)\right]\right\}$$

$$\dot{E}_h^{k=1}(35) = 0.985 * \left\{\dot{E}_h^{k=1}(17) + 0.6 * \left[\dot{E}_h^{k=1}(47) - \dot{E}_h^{k=1}(17)\right]\right\}$$

In evaluating the above equations, determine the quantities $\dot{Q}_h^{k=1}(47)$ from the $H1_1$ Test and evaluate them according to section 3.7. Determine the quantities $\dot{Q}_h^{k=1}(17)$ and $\dot{E}_h^{k=1}(17)$ from the $H3_1$ Test and evaluate them according to section 3.10. Use the paired values of $\dot{Q}_h^{k=1}(35)$ and $\dot{E}_h^{k=1}(35)$ derived from conducting the $H2_1$ Frost Accumulation Test and evaluated as specified in section 3.9.1 or use the paired values calculated using the above default equations, whichever contribute to a higher Region IV HSPF based on the DHRmin.

(b) Conducting a Frost Accumulation Test ($H2_3$) with the heat pump operating at its booster capacity is optional. If this optional test is not conducted, determine $Q_h^{k=3}(35)$ and $E_h^{k=3}(35)$ using the following equations to approximate this capacity and electrical power:

$$\dot{Q}_h^{k=3}(35) = QR_h^{k=2}(35) * \left\{\dot{Q}_h^{k=3}(17) + 1.20 * \left[\dot{Q}_h^{k=3}(17) - \dot{Q}_h^{k=3}(2)\right]\right\}$$

$$\dot{E}_h^{k=3}(35) = PR_h^{k=2}(35) * \left\{\dot{E}_h^{k=3}(17) + 1.20 * \left[\dot{E}_h^{k=3}(17) - \dot{E}_h^{k=3}(2)\right]\right\}$$

where:

$$QR_h^{k=2}(35) = \frac{\dot{Q}_h^{k=2}(35)}{\dot{Q}_h^{k=2}(17) + 0.6 * \left[\dot{Q}_h^{k=2}(47) - \dot{Q}_h^{k=2}(17)\right]}$$

$$PR_h^{k=2}(35) = \frac{\dot{E}_h^{k=2}(35)}{\dot{E}_h^{k=2}(17) + 0.6 * \left[\dot{E}_h^{k=2}(47) - \dot{E}_h^{k=2}(17)\right]}$$

Determine the quantities $\dot{Q}_h^{k=2}(47)$ and $\dot{E}_h^{k=2}(47)$ from the $H1_2$ Test and evaluate them according to section 3.7. Determine the quantities $\dot{Q}_h^{k=2}(35)$ and $\dot{E}_h^{k=2}(35)$ from the $H2_2$Test and evaluate them according to section 3.9.1. Determine the quantities $\dot{Q}_h^{k=2}(17)$ and $\dot{E}_h^{k=2}(17)$ from the $H3_2$Test, determine the quantities $\dot{Q}_h^{k=3}(17)$ and $\dot{E}_h^{k=3}(17)$ from the $H3_3$Test, and determine the quantities $\dot{Q}_h^{k=3}(2)$ and $\dot{E}_h^{k=3}(2)$ from the $H4_3$Test. Evaluate all six quantities according to section 3.10. Use the paired values of $\dot{Q}_h^{k=3}(35)$ and $\dot{E}_h^{k=3}(35)$ derived from conducting the $H2_3$Frost Accumulation Test and calculated as specified in section 3.9.1 or use the paired values calculated using the above default equations, whichever contribute to a higher Region IV HSPF based on the DHRmin.

(c) Conduct the high-temperature cyclic test ($H1C_1$) to determine the heating mode cyclic-degradation coefficient, C_D^h. If a triple-capacity heat pump locks out low capacity operation at lower outdoor temperatures, conduct the high-temperature cyclic test ($H1C_2$) to determine the high-capacity heating mode cyclic-degradation coefficient, C_D^h (k=2). The default C_D^h (k=2) is the same value as determined or assigned for the low-capacity cyclic-degradation coefficient, C_D^h [or equivalently, C_D^h (k=1)]. Finally, if a triple-capacity heat pump locks out both low and high capacity operation at the lowest outdoor temperatures, conduct the low-temperature cyclic test ($H3C_3$) to determine the booster-capacity heating mode cyclic-degradation coefficient, C_D^h (k=3). The default C_D^h (k=3) is the same value as determined or assigned for the high-capacity cyclic-degradation coefficient, C_D^h [or equivalently, C_D^h (k=2)]. Table 14 specifies test conditions for all 13 tests.

TABLE 14—HEATING MODE TEST CONDITIONS FOR UNITS WITH A TRIPLE-CAPACITY COMPRESSOR

Test description	Air entering indoor unit temperature (°F)		Air entering outdoor unit temperature (°F)		Compressor capacity	Heating air volume rate
	Dry bulb	Wet bulb	Dry bulb	Wet bulb		
$H0_1$ Test (required, steady)	70	60 (max)	62	56.5	Low	Heating Minimum.[1]
$H1_2$ Test (required, steady)	70	60 (max)	47	43	High	Heating Full-Load.[2]
$H1C_2$ Test (required,[8] cyclic)	70	60 (max)	47	43	High	[3].
$H1_1$ Test (required)	70	60 (max)	47	43	Low	Heating Minimum [1].
$H1C_1$ Test (required, cyclic)	70	60 (max)	47	43	Low	[4].
$H2_3$ Test (optional, steady)	70	60 (max)	35	33	Booster	Heating Full-Load.[2]
$H2_2$ Test (required)	70	60 (max)	35	33	High	Heating Full-Load.[2]
$H2_1$ Test (required)	70	60 (max)	35	33	Low	Heating Minimum.[1]
$H3_3$ Test (required, steady)	70	60 (max)	17	15	Booster	Heating Full-Load.[2]
$H3C_3$ Test [5] [6] (required, cyclic)	70	60 (max)	17	15	Booster	[7].
$H3_2$ Test (required, steady)	70	60 (max)	17	15	High	Heating Full-Load.[2]
$H3_1$ Test [5] (required, steady)	70	60 (max)	17	15	Low	Heating Minimum.[1]
$H4_3$ Test (required, steady)	70	60 (max)	2	1	Booster	Heating Full-Load.[2]

[1] Defined in section 3.1.4.5.
[2] Defined in section 3.1.4.4.
[3] Maintain the airflow nozzle(s) static pressure difference or velocity pressure during the ON period at the same pressure or velocity as measured during the $H1_2$ Test.
[4] Maintain the airflow nozzle(s) static pressure difference or velocity pressure during the ON period at the same pressure or velocity as measured during the $H1_1$Test.
[5] Required only if the heat pump's performance when operating at low compressor capacity and outdoor temperatures less than 37 °F is needed to complete the section 4.2.6 HSPF calculations.
[6] If table note [5] applies, the section 3.6.6 equations for $\dot{Q}_h^{k=1}$ (35) and $\dot{E}_h^{k=1}$ (17) may be used in lieu of conducting the $H2_1$ Test.
[7] Maintain the airflow nozzle(s) static pressure difference or velocity pressure during the ON period at the same pressure or velocity as measured during the $H3_3$ Test.
[8] Required only if the heat pump locks out low capacity operation at lower outdoor temperatures.

3.6.7 Tests for a heat pump having a single indoor unit having multiple blowers and offering two stages of compressor modulation. Conduct the heating mode tests specified in section 3.6.3.

3.7 Test procedures for steady-state Maximum Temperature and High Temperature heating mode tests (the $H0_1$, H1, $H1_2$, $H1_1$, and $H1_N$ Tests).

a. For the pretest interval, operate the test room reconditioning apparatus and the heat pump until equilibrium conditions are maintained for at least 30 minutes at the specified section 3.6 test conditions. Use the exhaust fan of the airflow measuring apparatus and, if installed, the indoor blower of the heat pump to obtain and then maintain the indoor air volume rate and/or the external static pressure specified for the particular test. Continuously record the dry-bulb temperature of the air entering the indoor coil, and the dry-bulb temperature and water vapor content of the air entering the outdoor coil. Refer to section 3.11 for additional requirements that depend on the selected secondary test method. After satisfying the pretest equilibrium requirements, make the measurements specified in Table 3 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3) for the Indoor Air Enthalpy method and the user-selected secondary method. Make said Table 3 measurements at equal intervals that span 5 minutes or less. Continue data sampling until a 30-minute period (*e.g.,* four consecutive 10-minute samples) is reached where the test tolerances specified in Table 15 are satisfied. For those continuously recorded parameters, use the entire data set for the 30-minute interval when evaluating Table 15 compliance. Determine the average electrical power consumption of the heat pump over the same 30-minute interval.

TABLE 15—TEST OPERATING AND TEST CONDITION TOLERANCES FOR SECTION 3.7 AND SECTION 3.10 STEADY-STATE HEATING MODE TESTS

	Test operating tolerance [1]	Test condition tolerance [1]
Indoor dry-bulb, °F:		
Entering temperature	2.0	0.5
Leaving temperature	2.0	
Indoor wet-bulb, °F:		
Entering temperature	1.0	
Leaving temperature	1.0	
Outdoor dry-bulb, °F:		

TABLE 15—TEST OPERATING AND TEST CONDITION TOLERANCES FOR SECTION 3.7 AND SECTION 3.10 STEADY-STATE HEATING MODE TESTS—Continued

	Test operating tolerance [1]	Test condition tolerance [1]
Entering temperature	2.0	0.5
Leaving temperature	[2] 2.0	
Outdoor wet-bulb, °F:		
Entering temperature	1.0	0.3
Leaving temperature	[2] 1.0	
External resistance to airflow, inches of water	0.12	[3] 0.02
Electrical voltage, % of rdg	2.0	1.5
Nozzle pressure drop, % of rdg	8.0	

[1] See section 1.2, Definitions.
[2] Only applies when the Outdoor Air Enthalpy Method is used.
[3] Only applies when testing non-ducted units.

b. Calculate indoor-side total heating capacity as specified in sections 7.3.4.1 and 7.3.4.3 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3). Do not adjust the parameters used in calculating capacity for the permitted variations in test conditions. Assign the average space heating capacity and electrical power over the 30-minute data collection interval to the variables $\dot{Q}_h^k$ and $\dot{E}_h^k(T)$ respectively. The "T" and superscripted "k" are the same as described in section 3.3. Additionally, for the heating mode, use the superscript to denote results from the optional $H1_N$ Test, if conducted.

c. For heat pumps tested without an indoor blower installed, increase $\dot{Q}_h^k(T)$ by

$$\frac{1250\, BTU/h}{1000\, scfm} * \bar{\dot{V}}_s$$

and increase $\dot{E}_h^k(T)$ by,

$$\frac{365\, W}{1000\, scfm} * \bar{\dot{V}}_s$$

where $\bar{\dot{V}}_s$ is the average measured indoor air volume rate expressed in units of cubic feet per minute of standard air (scfm). During the 30-minute data collection interval of a High Temperature Test, pay attention to preventing a defrost cycle. Prior to this time, allow the heat pump to perform a defrost cycle if automatically initiated by its own controls. As in all cases, wait for the heat pump's defrost controls to automatically terminate the defrost cycle. Heat pumps that undergo a defrost should operate in the heating mode for at least 10 minutes after defrost termination prior to beginning the 30-minute data collection interval. For some heat pumps, frost may accumulate on the outdoor coil during a High Temperature test. If the indoor coil leaving air temperature or the difference between the leaving and entering air temperatures decreases by more than 1.5 °F over the 30-minute data collection interval, then do not use the collected data to determine capacity. Instead, initiate a defrost cycle. Begin collecting data no sooner than 10 minutes after defrost termination. Collect 30 minutes of new data during which the Table 15 test tolerances are satisfied. In this case, use only the results from the second 30-minute data collection interval to evaluate $\dot{Q}_h^k(47)$ and $\dot{E}_h^k(47)$.

d. If conducting the cyclic heating mode test, which is described in section 3.8, record the average indoor-side air volume rate, $\bar{\dot{V}}$, specific heat of the air, $C_{p,a}$ (expressed on dry air basis), specific volume of the air at the nozzles, v_n' (or v_n), humidity ratio at the nozzles, W_n, and either pressure difference or velocity pressure for the flow nozzles. If either or both of the below criteria apply, determine the average, steady-state, electrical power consumption of the indoor blower motor ($\dot{E}_{fan,1}$):

1. The section 3.8 cyclic test will be conducted and the heat pump has a variable-speed indoor blower that is expected to be disabled during the cyclic test; or

2. The heat pump has a (variable-speed) constant-air volume-rate indoor blower and during the steady-state test the average external static pressure (ΔP_1) exceeds the applicable section 3.1.4.4 minimum (or targeted) external static pressure (ΔP_{min}) by 0.03 inches of water or more.

Determine $\dot{E}_{fan,1}$ by making measurements during the 30-minute data collection interval, or immediately following the test and prior to changing the test conditions. When the above "2" criteria applies, conduct the following four steps after determining $\dot{E}_{fan,1}$ (which corresponds to ΔP_1):

i. While maintaining the same test conditions, adjust the exhaust fan of the airflow measuring apparatus until the external static pressure increases to approximately $\Delta P_1 + (\Delta P_1 - \Delta P_{min})$.

ii. After re-establishing steady readings for fan motor power and external static pressure, determine average values for the indoor blower power ($\dot{E}_{fan,2}$) and the external static pressure (ΔP_2) by making measurements over a 5-minute interval.

iii. Approximate the average power consumption of the indoor blower motor if the 30-minute test had been conducted at ΔP_{min} using linear extrapolation:

$$\dot{E}_{fan,\min} = \frac{\dot{E}_{fan,2} - \dot{E}_{fan,1}}{\Delta P_2 - \Delta P_1}(\Delta P_{\min} - \Delta P_1) + \dot{E}_{fan,1}$$

iv. Decrease the total space heating capacity, $\dot{Q}_h^k(T)$, by the quantity ($\dot{E}_{fan,1} - \dot{E}_{fan,min}$), when expressed on a Btu/h basis. Decrease the total electrical power, $\dot{E}_h^k(T)$ by the same fan power difference, now expressed in watts.

e. If the temperature sensors used to provide the primary measurement of the indoor-side dry bulb temperature difference during the steady-state dry-coil test and the subsequent cyclic dry-coil test are different, include measurements of the latter sensors among the regularly sampled data. Beginning at the start of the 30-minute data collection period, measure and compute the indoor-side air dry-bulb temperature difference using both sets of instrumentation, ΔT (Set SS) and ΔT (Set CYC), for each equally spaced data sample. If using a consistent data sampling rate that is less than 1 minute, calculate and record minutely averages for the two temperature differences. If using a consistent sampling rate of one minute or more, calculate and record the two temperature differences from each data sample. After having recorded the seventh (i=7) set of temperature differences, calculate the following ratio using the first seven sets of values:

$$F_{CD} = \frac{1}{7}\sum_{i-6}^{i} \frac{\Delta T(Set\ SS)}{\Delta T(Set\ CYC)}$$

Each time a subsequent set of temperature differences is recorded (if sampling more frequently than every 5 minutes), calculate F_{CD} using the most recent seven sets of values. Continue these calculations until the 30-minute period is completed or until a value for F_{CD} is calculated that falls outside the allowable range of 0.94–1.06. If the latter occurs, immediately suspend the test and identify the cause for the disparity in the two temperature difference measurements. Recalibration of one or both sets of instrumentation may be required. If all the values for F_{CD} are within the allowable range, save the final value of the ratio from the 30-minute test as F_{CD}^*. If the temperature sensors used to provide the primary measurement of the indoor-side dry bulb temperature difference during the steady-state dry-coil test and the subsequent cyclic dry-coil test are the same, set $F_{CD}^* = 1$.

3.8 Test procedures for the cyclic heating mode tests (the $H0C_1$, H1C, $H1C_1$ and $H1C_2$ Tests).

a. Except as noted below, conduct the cyclic heating mode test as specified in section 3.5. As adapted to the heating mode, replace section 3.5 references to ''the steady-state dry coil test'' with ''the heating mode steady-state test conducted at the same test conditions as the cyclic heating mode test.'' Use the test tolerances in Table 16 rather than Table 9. Record the outdoor coil entering wet-bulb temperature according to the requirements given in section 3.5 for the outdoor coil entering dry-bulb temperature. Drop the subscript ''dry'' used in variables cited in section 3.5 when referring to quantities from the cyclic heating mode test., The default C_D value for heating is 0.25. If available, use electric resistance heaters (see section 2.1) to minimize the variation in the inlet air temperature. Determine the total space heating delivered during the cyclic heating test, q_{cyc}, as specified in section 3.5 except for making the following changes:

(1) When evaluating Equation 3.5–1, use the values of $\bar{\dot{V}}$, $C_{p,a}$, v_n', (or v_n), and W_n that were recorded during the section 3.7 steady-state test conducted at the same test conditions.

(2) Calculate Γ using,

(2) Calculate Γ using, $\Gamma = F_{CD}^* \int_{\tau_1}^{\tau_2} [T_{a1}(\tau) - T_{a2}(\tau)]\delta\tau,\ \ hr \times {}^\circ F,$

where F_{CD}^* is the value recorded during the section 3.7 steady-state test conducted at the same test condition.

b. For ducted heat pumps tested without an indoor blower installed (excluding the special case where a variable-speed fan is temporarily removed), increase q_{cyc} by the amount calculated using Equation 3.5–3. Additionally, increase e_{cyc} by the amount calculated using Equation 3.5–2. In making these calculations, use the average indoor air volume rate ($\bar{\dot{V}}_s$) determined from the section 3.7 steady-state heating mode test conducted at the same test conditions.

c. For non-ducted heat pumps, subtract the electrical energy used by the indoor blower during the 3 minutes after compressor cutoff from the non-ducted heat pump's integrated heating capacity, q_{cyc}.

d. If a heat pump defrost cycle is manually or automatically initiated immediately prior to or during the OFF/ON cycling, operate the heat pump continuously until 10 minutes after defrost termination. After that, begin cycling the heat pump immediately or delay until the specified test conditions have been re-established. Pay attention to preventing defrosts after beginning the cycling process. For heat pumps that cycle off the indoor blower during a defrost cycle, make no effort here to restrict the air movement through the indoor coil while the fan is off. Resume the OFF/ON cycling while conducting a minimum of two complete compressor OFF/ON cycles before determining q_{cyc} and e_{cyc}.

3.8.1 Heating mode cyclic-degradation coefficient calculation.

Use the results from the required cyclic test and the required steady-state test that were conducted at the same test conditions to determine the heating mode cyclic-degradation coefficient C_D^h. Add ''(k=2)'' to the coefficient if it corresponds to a two-capacity unit cycling at high capacity. For the below calculation of the heating mode cyclic degradation coefficient, do not include the duct loss correction from section 7.3.3.3 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3) in determining $\dot{Q}_h^k(T_{cyc})$ (or q_{cyc}). The default value for two-capacity units cycling at high capacity, however, is the low-capacity coefficient, *i.e.,* C_D^h (k=2) = C_D^h. The tested C_{Dh} is calculated as follows:

$$C_D^h = \frac{1 - \frac{COP_{cyc}}{COP_{ss}(T_{cyc})}}{1 - HLF}$$

Where,

$$COP_{cyc} = \frac{q_{cyc}}{3.413 \frac{Btu/h}{W} * e_{cyc}}$$

the average coefficient of performance during the cyclic heating mode test, dimensionless.

$$COP_{ss}(T_{cyc}) = \frac{\dot{Q}_h^k(T_{cyc})}{3.413 \frac{Btu/h}{W} * \dot{E}_h^k(T_{cyc})}$$

the average coefficient of performance during the steady-state heating mode test conducted at the same test conditions—*i.e.,* same outdoor dry bulb temperature, T_{cyc}, and speed/capacity, k, if applicable—as specified for the cyclic heating mode test, dimensionless.

$$HLF = \frac{q_{cyc}}{\dot{Q}_h^k(T_{cyc}) * \Delta\tau_{cyc}}$$

the heating load factor, dimensionless.

T_{cyc} = the nominal outdoor temperature at which the cyclic heating mode test is conducted, 62 or 47 °F.

$\Delta\tau_{cyc}$ = the duration of the OFF/ON intervals; 0.5 hours when testing a heat pump having a single-speed or two-capacity compressor and 1.0 hour when testing a heat pump having a variable-speed compressor.

Round the calculated value for C_D^h to the nearest 0.01. If C_D^h is negative, then set it equal to zero.

TABLE 16—TEST OPERATING AND TEST CONDITION TOLERANCES FOR CYCLIC HEATING MODE TESTS

	Test operating tolerance [1]	Test condition tolerance [1]
Indoor entering dry-bulb temperature,[2] °F	2.0	0.5
Indoor entering wet-bulb temperature,[2] °F	1.0	
Outdoor entering dry-bulb temperature,[2] °F	2.0	0.5
Outdoor entering wet-bulb temperature,[2] °F	2.0	1.0
External resistance to air-flow,[2] inches of water	0.12	
Airflow nozzle pressure difference or velocity pressure,[2]% of reading	2.0	[3] 2.0
Electrical voltage,[4]% of rdg	8.0	1.5

[1] See section 1.2, Definitions.

[2] Applies during the interval that air flows through the indoor (outdoor) coil except for the first 30 seconds after flow initiation. For units having a variable-speed indoor blower that ramps, the tolerances listed for the external resistance to airflow shall apply from 30 seconds after achieving full speed until ramp down begins.

[3] The test condition shall be the average nozzle pressure difference or velocity pressure measured during the steady-state test conducted at the same test conditions.

[4] Applies during the interval that at least one of the following—the compressor, the outdoor fan, or, if applicable, the indoor blower—are operating, except for the first 30 seconds after compressor start-up.

3.9 Test procedures for Frost Accumulation heating mode tests (the H2, $H2_2$, $H2_V$, and $H2_1$ Tests).

a. Confirm that the defrost controls of the heat pump are set as specified in section 2.2.1. Operate the test room reconditioning apparatus and the heat pump for at least 30 minutes at the specified section 3.6 test conditions before starting the ''preliminary'' test period. The preliminary test period must immediately precede the ''official'' test period, which is the heating and defrost interval over which data are collected for evaluating average space heating capacity and average electrical power consumption.

b. For heat pumps containing defrost controls which are likely to cause defrosts at intervals less than one hour, the preliminary test period starts at the termination of an automatic defrost cycle and ends at the termination of the next occurring automatic defrost cycle. For heat pumps containing defrost controls which are likely to cause defrosts at intervals exceeding one hour, the preliminary test period must consist of a heating interval lasting at least one hour followed by a defrost cycle that is either manually or automatically initiated. In all cases, the heat pump's own controls must govern when a defrost cycle terminates.

c. The official test period begins when the preliminary test period ends, at defrost termination. The official test period ends at the termination of the next occurring automatic defrost cycle. When testing a heat pump that uses a time-adaptive defrost control system (see section 1.2, Definitions), however, manually initiate the defrost cycle that ends the official test period at the instant indicated by instructions provided by the manufacturer. If the heat pump has not undergone a defrost after 6 hours, immediately conclude the test and use the results from the full 6-hour period to calculate the average space heating capacity and average electrical power consumption.

For heat pumps that turn the indoor blower off during the defrost cycle, take steps to cease forced airflow through the indoor coil and block the outlet duct whenever the heat pump's controls cycle off the indoor blower. If it is installed, use the outlet damper box described in section 2.5.4.1 to affect the blocked outlet duct.

d. Defrost termination occurs when the controls of the heat pump actuate the first change in converting from defrost operation to normal heating operation. Defrost initiation occurs when the controls of the heat pump first alter its normal heating operation in order to eliminate possible accumulations of frost on the outdoor coil.

e. To constitute a valid Frost Accumulation test, satisfy the test tolerances specified in Table 17 during both the preliminary and official test periods. As noted in Table 17, test operating tolerances are specified for two sub-intervals: (1) When heating, except for the first 10 minutes after the termination of a defrost cycle (Sub-interval H, as described in Table 17) and (2) when defrosting, plus these same first 10 minutes after defrost termination (Sub-interval D, as described in Table 17). Evaluate compliance with Table 17 test condition tolerances and the majority of the test operating tolerances using the averages from measurements recorded only during Sub-interval H. Continuously record the dry bulb temperature of the air entering the indoor coil, and the dry bulb temperature and water vapor content of the air entering the outdoor coil. Sample the remaining parameters listed in Table 17 at equal intervals that span 5 minutes or less.

f. For the official test period, collect and use the following data to calculate average space heating capacity and electrical power. During heating and defrosting intervals when the controls of the heat pump have the indoor blower on, continuously record the dry-bulb temperature of the air entering (as noted above) and leaving the indoor coil. If using a thermopile, continuously record the difference between the leaving and entering dry-bulb temperatures during the interval(s) that air flows through the indoor coil. For heat pumps tested without an indoor blower installed, determine the corresponding cumulative time (in hours) of indoor coil airflow, $\Delta\tau_a$. Sample measurements used in calculating the air volume rate (refer to sections 7.7.2.1 and 7.7.2.2 of ASHRAE Standard 37–2009) at equal intervals that span 10 minutes or less. (Note: In the first printing of ASHRAE Standard 37–2009, the second IP equation for Q_{mi} should read:) Record the electrical energy consumed, expressed in watt-hours, from defrost termination to defrost termination, $e_{DEF}^k(35)$, as well as the corresponding elapsed time in hours, $\Delta\tau_{FR}$.

TABLE 17—TEST OPERATING AND TEST CONDITION TOLERANCES FOR FROST ACCUMULATION HEATING MODE TESTS

	Test operating tolerance [1]		Test condition tolerance [1]
	Sub-interval H [2]	Sub-interval D [3]	Sub-interval H [2]
Indoor entering dry-bulb temperature, °F	2.0	[4] 4.0	0.5
Indoor entering wet-bulb temperature, °F	1.0		
Outdoor entering dry-bulb temperature, °F	2.0	10.0	1.0
Outdoor entering wet-bulb temperature, °F	1.5		0.5
External resistance to airflow, inches of water	0.12		[5] 0.02
Electrical voltage, % of rdg	2.0		1.5

[1] See section 1.2, Definitions.
[2] Applies when the heat pump is in the heating mode, except for the first 10 minutes after termination of a defrost cycle.
[3] Applies during a defrost cycle and during the first 10 minutes after the termination of a defrost cycle when the heat pump is operating in the heating mode.
[4] For heat pumps that turn off the indoor blower during the defrost cycle, the noted tolerance only applies during the 10 minute interval that follows defrost termination.
[5] Only applies when testing non-ducted heat pumps.

3.9.1 Average space heating capacity and electrical power calculations.

a. Evaluate average space heating capacity, $\dot{Q}_h^k(35)$, when expressed in units of Btu per hour, using:

$$\dot{Q}_h^k(35) = \frac{60 * \bar{\dot{V}} * C_{p,a} * \Gamma}{\Delta\tau_{FR}[v_n' * (1 + W_n)]} = \frac{60 * \bar{\dot{V}} * C_{p,a} * \Gamma}{\Delta\tau_{FR} v_n}$$

Where,

$\bar{\dot{V}}$ = the average indoor air volume rate measured during Sub-interval H, cfm.

$C_{p,a}$ = 0.24 + 0.444 · W_n, the constant pressure specific heat of the air-water vapor mixture that flows through the indoor coil and is expressed on a dry air basis, Btu/lbm_{da} · °F.

v_n' = specific volume of the air-water vapor mixture at the nozzle, ft³/lbmmx.

W_n = humidity ratio of the air-water vapor mixture at the nozzle, lbm of water vapor per lbm of dry air.

$\Delta\tau_{FR} = \tau_2 - \tau_1$, the elapsed time from defrost termination to defrost termination, hr.

$$\Gamma = \int_{\tau_1}^{\tau_2} [T_{a2}(\tau) - T_{a1}(\tau)] d\tau, \; hr * {}^\circ F$$

$T_{al}(\tau)$ = dry bulb temperature of the air entering the indoor coil at elapsed time τ, °F; only recorded when indoor coil airflow occurs; assigned the value of zero during periods (if any) where the indoor blower cycles off.

$T_{a2}(\tau)$ = dry bulb temperature of the air leaving the indoor coil at elapsed time τ, °F; only recorded when indoor coil airflow occurs; assigned the value of zero during periods (if any) where the indoor blower cycles off.

τ_1 = the elapsed time when the defrost termination occurs that begins the official test period, hr.

τ_2 = the elapsed time when the next automatically occurring defrost termination occurs, thus ending the official test period, hr.

v_n = specific volume of the dry air portion of the mixture evaluated at the dry-bulb temperature, vapor content, and barometric pressure existing at the nozzle, ft³ per lbm of dry air.

To account for the effect of duct losses between the outlet of the indoor unit and the section 2.5.4 dry-bulb temperature grid, adjust $\dot{Q}_h^k(35)$ in accordance with section 7.3.4.3 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3).

b. Evaluate average electrical power, $\dot{E}_h^k(35)$, when expressed in units of watts, using:

$$\dot{E}_h^k(35) = \frac{e_{def}(35)}{\Delta\tau_{FR}}$$

For heat pumps tested without an indoor blower installed, increase $\dot{Q}_h^k(35)$ by,

$$\frac{1250\, Btu/h}{1000\, scfm} * \bar{\dot{V}}_s * \frac{\Delta\tau_a}{\Delta\tau_{FR}}$$

and increase $\dot{E}_h^k(35)$ by,

$$\frac{365\,W}{1000\,scfm} * \bar{\dot{V}}_s * \frac{\Delta\tau_a}{\Delta\tau_{FR}}$$

Where $\bar{\dot{V}}_s$ is the average indoor air volume rate measured during the Frost Accumulation heating mode test and is expressed in units of cubic feet per minute of standard air (scfm).

c. For heat pumps having a constant-air-volume-rate indoor blower, the five additional steps listed below are required if the average of the external static pressures measured during sub-Interval H exceeds the applicable section 3.1.4.4, 3.1.4.5, or 3.1.4.6 minimum (or targeted) external static pressure (ΔP_{min}) by 0.03 inches of water or more:

1. Measure the average power consumption of the indoor blower motor ($\dot{E}_{fan,1}$) and record the corresponding external static pressure (ΔP_1) during or immediately following the Frost Accumulation heating mode test. Make the measurement at a time when the heat pump is heating, except for the first 10 minutes after the termination of a defrost cycle.

2. After the Frost Accumulation heating mode test is completed and while maintaining the same test conditions, adjust the exhaust fan of the airflow measuring apparatus until the external static pressure increases to approximately $\Delta P_1 + (\Delta P_1 - \Delta P_{min})$.

3. After re-establishing steady readings for the fan motor power and external static pressure, determine average values for the indoor blower power ($\dot{E}_{fan,2}$) and the external static pressure (ΔP_2) by making measurements over a 5-minute interval.

4. Approximate the average power consumption of the indoor blower motor had the Frost Accumulation heating mode test been conducted at ΔP_{min} using linear extrapolation:

$$\dot{E}_{fan,\min} = \frac{\dot{E}_{fan,2} - \dot{E}_{fan,1}}{\Delta P_2 - \Delta P_1}(\Delta P_{\min} - \Delta P_1) + \dot{E}_{fan,1}$$

5. Decrease the total heating capacity, $\dot{Q}_h^k(35)$, by the quantity $[(\dot{E}_{fan,1} - \dot{E}_{fan,min}) \cdot (\Delta\tau_a/\Delta\tau_{FR})]$, when expressed on a Btu/h basis. Decrease the total electrical power, $E_h^k(35)$, by the same quantity, now expressed in watts.

3.9.2 Demand defrost credit.

a. Assign the demand defrost credit, F_{def}, that is used in section 4.2 to the value of 1 in all cases except for heat pumps having a demand-defrost control system (see section 1.2, Definitions). For such qualifying heat pumps, evaluate F_{def} using,

$$F_{def} = 1 + 0.03 * \left[1 - \frac{\Delta\tau_{def} - 1.5}{\Delta\tau_{\max} - 1.5}\right]$$

Where,

$\Delta\tau_{def}$ = the time between defrost terminations (in hours) or 1.5, whichever is greater. A value of 6 must be assigned to $\Delta\tau_{def}$ if this limit is reached during a Frost Accumulation test and the heat pump has not completed a defrost cycle.

$\Delta\tau_{max}$ = maximum time between defrosts as allowed by the controls (in hours) or 12, whichever is less, as provided in the installation manuals included with the unit by the manufacturer.

b. For two-capacity heat pumps and for section 3.6.2 units, evaluate the above equation using the $\Delta\tau_{def}$ that applies based on the Frost Accumulation Test conducted at high capacity and/or at the Heating Full-load Air Volume Rate. For variable-speed heat pumps, evaluate $\Delta\tau_{def}$ based on the required Frost Accumulation Test conducted at the intermediate compressor speed.

3.10 Test procedures for steady-state Low Temperature heating mode tests (the H3, H3$_2$, and H3$_1$ Tests).

Except for the modifications noted in this section, conduct the Low Temperature heating mode test using the same approach as specified in section 3.7 for the Maximum and High Temperature tests. After satisfying the section 3.7 requirements for the pretest interval but before beginning to collect data to determine $\dot{Q}_h^k(17)$ and $\dot{E}_h^k(17)$, conduct a defrost cycle. This defrost cycle may be manually or automatically initiated. The defrost sequence must be terminated by the action of the heat pump's defrost controls. Begin the 30-minute data collection interval described in section 3.7, from which $\dot{Q}_h^k(17)$ and $\dot{E}_h^k(17)$ are determined, no sooner than 10 minutes after defrost termination. Defrosts should be prevented over the 30-minute data collection interval.

3.11 Additional requirements for the secondary test methods.

3.11.1 If using the Outdoor Air Enthalpy Method as the secondary test method.

During the ''official'' test, the outdoor air-side test apparatus described in section 2.10.1 is connected to the outdoor unit. To help compensate for any effect that the addition of this test apparatus may have on the unit's performance, conduct a ''preliminary'' test where the outdoor air-side test apparatus is disconnected. Conduct a preliminary test prior to the first section 3.2 steady-state cooling mode test and prior to the first section 3.6 steady-state heating mode test. No other preliminary tests are required so long as the unit operates the outdoor fan during all cooling mode steady-state tests at the same speed and all heating mode steady-state tests at the same speed. If using more than one outdoor fan speed for the cooling mode steady-state tests, however, conduct a preliminary test prior to each cooling mode test where a different fan speed is first used. This same requirement applies for the heating mode tests.

3.11.1.1 If a preliminary test precedes the official test.

a. The test conditions for the preliminary test are the same as specified for the official test. Connect the indoor air-side test apparatus to the indoor coil; disconnect the outdoor air-side test apparatus. Allow the test room reconditioning apparatus and the unit being tested to operate for at least one hour. After attaining equilibrium conditions, measure the following quantities at equal intervals that span 5 minutes or less:

1. The section 2.10.1 evaporator and condenser temperatures or pressures;

2. Parameters required according to the Indoor Air Enthalpy Method.

Continue these measurements until a 30-minute period (*e.g.,* four consecutive 10-minute samples) is obtained where the Table 8 or Table 15, whichever applies, test tolerances are satisfied.

b. After collecting 30 minutes of steady-state data, reconnect the outdoor air-side test apparatus to the unit. Adjust the exhaust fan of the outdoor airflow measuring apparatus until averages for the evaporator and condenser temperatures, or the saturated temperatures corresponding to the measured pressures, agree within ±0.5 °F of the averages achieved when the outdoor air-side test apparatus was disconnected. Calculate the averages for the reconnected case using five or more consecutive readings taken at one minute intervals. Make these consecutive readings after re-establishing equilibrium conditions and before initiating the official test.

3.11.1.2 If a preliminary test does not precede the official test.

Connect the outdoor-side test apparatus to the unit. Adjust the exhaust fan of the outdoor airflow measuring apparatus to achieve the same external static pressure as measured during the prior preliminary test conducted with the unit operating in the same cooling or heating mode at the same outdoor fan speed.

3.11.1.3 Official test.

a. Continue (preliminary test was conducted) or begin (no preliminary test) the official test by making measurements for both the Indoor and Outdoor Air Enthalpy Methods at equal intervals that span 5 minutes or less. Discontinue these measurements only after obtaining a 30-minute period where the specified test condition and test operating tolerances are satisfied. To constitute a valid official test:

(1) Achieve the energy balance specified in section 3.1.1; and,

(2) For cases where a preliminary test is conducted, the capacities determined using the Indoor Air Enthalpy Method from the official and preliminary test periods must agree within 2.0 percent.

b. For space cooling tests, calculate capacity from the outdoor air-enthalpy measurements as specified in sections 7.3.3.2 and 7.3.3.3 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3). Calculate heating capacity based on outdoor air-enthalpy measurements as specified in sections 7.3.4.2 and 7.3.3.4.3 of the same ASHRAE Standard. Adjust the outdoor-side capacity according to section 7.3.3.4 of ASHRAE Standard 37–2009 to account for line losses when testing split systems. Use the outdoor unit fan power as measured during the official test and not the value measured during the preliminary test, as described in section 8.6.2 of ASHRAE Standard 37–2009, when calculating the capacity.

3.11.2 If using the Compressor Calibration Method as the secondary test method.

a. Conduct separate calibration tests using a calorimeter to determine the refrigerant flow rate. Or for cases where the superheat of the refrigerant leaving the evaporator is less than 5 °F, use the calorimeter to measure total capacity rather than refrigerant flow rate. Conduct these calibration tests at the same test conditions as specified for the tests in this appendix. Operate the unit for at least one hour or until obtaining equilibrium conditions before collecting data that will be used in determining the average refrigerant flow rate or total capacity. Sample the data at equal intervals that span 5 minutes or less. Determine average flow rate or average capacity from data sampled over a 30-minute period where the Table 8 (cooling) or the Table 15 (heating) tolerances are satisfied. Otherwise, conduct the calibration tests according to sections 5, 6, 7, and 8 of ASHRAE Standard 23.1–2010 (incorporated by reference, see § 430.3); sections 5, 6, 7, 8, 9, and 11 of ASHRAE Standard 41.9–2011 (incorporated by reference, see § 430.3); and section 7.4 of ASHRAE Standard 37–2009(incorporated by reference, see § 430.3).

b. Calculate space cooling and space heating capacities using the compressor calibration method measurements as specified in section 7.4.5 and 7.4.6 respectively, of ASHRAE Standard 37–2009.

3.11.3 If using the Refrigerant-Enthalpy Method as the secondary test method.

Conduct this secondary method according to section 7.5 of ASHRAE Standard 37–2009. Calculate space cooling and heating capacities using the refrigerant-enthalpy method measurements as specified in sections 7.5.4 and 7.5.5, respectively, of the same ASHRAE Standard.

3.12 Rounding of space conditioning capacities for reporting purposes.

a. When reporting rated capacities, round them off as specified in § 430.23 (for a single unit) and in 10 CFR 429.16 (for a sample).

b. For the capacities used to perform the section 4 calculations, however, round only to the nearest integer.

3.13 Laboratory testing to determine off mode average power ratings.

Conduct one of the following tests after the completion of the B, B_1, or B_2 Test, whichever comes last: If the central air conditioner or heat pump lacks a compressor crankcase heater, perform the test in Section 3.13.1; if the central air conditioner or heat pump has compressor crankcase heater that lacks controls, perform the test in Section 3.13.1; if the central air conditioner or heat pump has a compressor crankcase heater equipped with controls, perform the test in Section 3.13.2.

3.13.1 This test determines the off mode average power rating for central air conditioners and heat pumps that lack a compressor crankcase heater, or have a compressor crankcase heater that lacks controls.

a. Configure Controls: Configure the controls of the central air conditioner or heat pump so that it operates as if connected to a building thermostat that is set to the OFF position. This particular test contains no requirements as to ambient conditions within the test rooms, and room conditions are allowed to change during the test. Ensure that the low-voltage transformer and low-voltage components are connected.

b. Measure $P1_x$: Determine the average power from non-zero value data measured over a 5-minute interval of the non-operating central air conditioner or heat pump and designate the average power as $P1_x$, the shoulder season total off mode power.

c. Measure P_x for coil-only split systems (that would be installed in the field with a furnace having a dedicated board for indoor controls) and for blower-coil split systems for which a furnace is the designated air mover: Disconnect all low-voltage wiring for the *outdoor* components and *outdoor* controls from the low-voltage transformer. Determine the average power from non-zero value data measured over a 5-minute interval of the power supplied to the (remaining) low-voltage components of the central air conditioner or heat pump, or low-voltage power, P_x.

d. Calculate $P1$:

Single-package systems and blower coil split systems for which the designated air mover is not a furnace: Divide the shoulder season total off mode power ($P1_x$) by the number of compressors to calculate *P1*, the shoulder season per-compressor off mode power. If the compressor is a modulating-type, assign a value of 1.5 for the number of compressors. Round *P1* to the nearest watt and record as both *P1* and *P2*, the latter of which is the heating season per-compressor off mode power. The expression for calculating *P1* is as follows:

$$P1 = \frac{P1_x}{number\ of\ compressors}.$$

Coil-only split systems (that would be installed in the field with a furnace having a dedicated board for indoor controls) and blower-coil split systems for which a furnace is the designated air mover: Subtract the low-voltage power (P_x) from the shoulder season total off mode power ($P1_x$) and divide by the number of compressors to calculate *P1*, the shoulder season per-compressor off mode power. If the compressor is a modulating-type, assign a value of 1.5 for the number of compressors. Round *P1* to the nearest watt and record as both *P1* and *P2*, the latter of which is the heating season per-compressor off mode power. The expression for calculating *P1* is as follows:

$$P1 = \frac{P1_x - P_x}{number\ of\ compressors}.$$

3.13.2 This test determines the off mode average power rating for central air conditioners and heat pumps that have a compressor crankcase heater equipped with controls.

a. Configure Controls: Position a temperature sensor to measure the outdoor dry-bulb temperature in the air between 2 and 6 inches from the crankcase heater temperature sensor or, if no such temperature sensor exists, position it in the air between 2 and 6 inches from the crankcase heater. Utilize the temperature measurements from this sensor for this portion of the test procedure. Configure the controls of the central air conditioner or heat pump so that it operates as if connected to a building thermostat that is set to the OFF position. Ensure that the low-voltage transformer and low-voltage components are connected. Adjust the outdoor temperature at a rate of change of no more than 20 °F per hour and achieve an outdoor dry-bulb temperature of 72 °F. Maintain this temperature within ±2 °F for at least 5 minutes, while maintaining an indoor dry-bulb temperature of between 75 °F and 85 °F.

b. Measure $P1_x$: Determine the average power from non-zero value data measured over a 5-minute interval of the non-operating central air conditioner or heat pump and designate the average power as $P1_x$, the shoulder season total off mode power.

c. Reconfigure Controls: In the process of reaching the target outdoor dry-bulb temperature, adjust the outdoor temperature at a rate of change of no more than 20 °F per hour. This target temperature is the temperature specified by the manufacturer in the DOE Compliance Certification Database at which the crankcase heater turns on, minus five degrees Fahrenheit. Maintain this temperature within ±2 °F for at least 5 minutes, while maintaining an indoor dry-bulb temperature of between 75 °F and 85 °F.

d. Measure $P2_x$: Determine the average non-zero power of the non-operating central air conditioner or heat pump over a 5-minute interval and designate it as $P2_x$, the heating season total off mode power.

e. Measure P_x for coil-only split systems (that would be installed in the field with a furnace having a dedicated board for indoor controls) and for blower-coil split systems for which a furnace is the designated air mover: Disconnect all low-voltage wiring for the *outdoor* components and *outdoor* controls from the low-voltage transformer. Determine the average power from non-zero value data measured over a 5-minute interval of the power supplied to the (remaining) low-voltage components of the central air conditioner or heat pump, or low-voltage power, P_x.

f. Calculate *P1*:

Single-package systems and blower coil split systems for which the air mover is not a furnace: Divide the shoulder season total off mode power ($P1_x$) by the number of compressors to calculate *P1,* the shoulder season per-compressor off mode power. Round to the nearest watt. If the compressor is a modulating-type, assign a value of 1.5 for the number of compressors. The expression for calculating *P1* is as follows:

$$P1 = \frac{P1_x}{number\ of\ compressors}.$$

Coil-only split systems (that would be installed in the field with a furnace having a dedicated board for indoor controls) and blower-coil split systems for which a furnace is the designated air mover: Subtract the low-voltage power (P_x) from the shoulder season total off mode power ($P1_x$) and divide by the number of compressors to calculate *P1*, the shoulder season per-compressor off mode power. Round to the nearest watt. If the compressor is a modulating-type, assign a value of 1.5 for the number of compressors. The expression for calculating *P1* is as follows:

$$P1 = \frac{P1_x - P_x}{number\ of\ compressors}.$$

h. Calculate *P2*:

Single-package systems and blower coil split systems for which the air mover is not a furnace: Divide the heating season total off mode power ($P2_x$) by the number of compressors to calculate *P2*, the heating season per-compressor off mode power. Round to the nearest watt. If the compressor is a modulating-type, assign a value of 1.5 for the number of compressors. The expression for calculating *P2* is as follows:

$$P2 = \frac{P2_x}{number\ of\ compressors}.$$

Coil-only split systems (that would be installed in the field with a furnace having a dedicated board for indoor controls) and blower-coil split systems for which a furnace is the designated air mover: Subtract the low-voltage power (P_x) from the heating season total off mode power ($P2_x$) and divide by the number of compressors to calculate *P2*, the heating season per-compressor off mode power. Round to the nearest watt. If the compressor is a modulating-type, assign a value of 1.5 for the number of compressors. The expression for calculating *P2* is as follows:

$$P2 = \frac{P2_x - P_x}{number\ of\ compressors}.$$

4. Calculations of Seasonal Performance Descriptors

4.1 Seasonal Energy Efficiency Ratio (SEER) Calculations. SEER must be calculated as follows: For equipment covered under sections 4.1.2, 4.1.3, and 4.1.4, evaluate the seasonal energy efficiency ratio,

$$\text{Equation 4.1-1 } SEER = \frac{\sum_{j=1}^{8} q_c(T_j)}{\sum_{j=1}^{8} e_c(T_j)} = \frac{\sum_{j=1}^{8} \frac{q_c(T_j)}{N}}{\sum_{j=1}^{8} \frac{e_c(T_j)}{N}}$$

Where,

$\frac{q_c(T_j)}{N}$ = the ratio of the total space cooling provided during periods of the space cooling season when the outdoor temperature fell within the range represented by bin temperature T_j to the total number of hours in the cooling season (N), Btu/h.

$\frac{e_c(T_j)}{N}$ = the electrical energy consumed by the test unit during periods of the space cooling season when the outdoor temperature fell within the range represented by bin temperature T_j to the total number of hours in the cooling season (N), W.

T_j = the outdoor bin temperature, °F. Outdoor temperatures are grouped or "binned." Use bins of 5 °F with the 8 cooling season bin temperatures being 67, 72, 77, 82, 87, 92, 97, and 102 °F.

j = the bin number. For cooling season calculations, j ranges from 1 to 8.

Additionally, for sections 4.1.2, 4.1.3, and 4.1.4, use a building cooling load, $BL(T_j)$. When referenced, evaluate $BL(T_j)$ for cooling using,

$$BL(T_j) = \frac{(T_j - 65)}{95 - 65} * \frac{\dot{Q}_c^{k=2}(95)}{1.1}$$

where,

$\dot{Q}_c^{k=2}(95)$ = the space cooling capacity determined from the A_2 Test and calculated as specified in section 3.3, Btu/h.

1.1 = sizing factor, dimensionless.

The temperatures 95 °F and 65 °F in the building load equation represent the selected outdoor design temperature and the zero-load base temperature, respectively.

4.1.1 SEER calculations for an air conditioner or heat pump having a single-speed compressor that was tested with a fixed-speed indoor blower installed, a constant-air-volume-rate indoor blower installed, or with no indoor blower installed.

a. Evaluate the seasonal energy efficiency ratio, expressed in units of Btu/watt-hour, using:

$SEER = PLF(0.5) * EER_B$

where,

$$EER_B = \frac{\dot{Q}_c(82)}{\dot{E}_c(82)} = \text{the energy efficiency ratio determined from the B Test described in}$$

sections 3.2.1, 3.1.4.1, and 3.3, Btu/h per watt.

$PLF(0.5) = 1 - 0.5 \cdot C_D^c$, the part-load performance factor evaluated at a cooling load factor of 0.5, dimensionless.

b. Refer to section 3.3 regarding the definition and calculation of $\dot{Q}_c(82)$ and $\dot{E}_c(82)$.

4.1.2 SEER calculations for an air conditioner or heat pump having a single-speed compressor and a variable-speed variable-air-volume-rate indoor blower.

4.1.2.1 Units covered by section 3.2.2.1 where indoor blower capacity modulation correlates with the outdoor dry bulb temperature. The manufacturer must provide information on how the indoor air volume rate or the indoor blower speed varies over the outdoor temperature range of 67 °F to 102 °F. Calculate SEER using Equation 4.1–1. Evaluate the quantity $q_c(T_j)/N$ in Equation 4.1–1 using,

$$\text{Equation 4.1.2-1} \quad \frac{q_c(T_j)}{N} = X(T_j) * \dot{Q}_c(T_j) * \frac{n_j}{N}$$

$$X(T_j) = \begin{Bmatrix} BL(T_j)/\dot{Q}_c(T_j) \\ or \\ 1 \end{Bmatrix} \text{whichever is less; the cooling mode load factor for}$$

temperature bin j, dimensionless.

where,

$\dot{Q}_c(T_j)$ = the space cooling capacity of the test unit when operating at outdoor temperature, T_j, Btu/h.

n_j/N = fractional bin hours for the cooling season; the ratio of the number of hours during the cooling season when the outdoor temperature fell within the range represented by bin temperature T_j to the total number of hours in the cooling season, dimensionless.

a. For the space cooling season, assign n_j/N as specified in Table 18. Use Equation 4.1–2 to calculate the building load, $BL(T_j)$. Evaluate $\dot{Q}_c(T_j)$ using,

$$\text{Equation 4.1.2-2} \quad \dot{Q}_c(T_j) = \dot{Q}_c^{k=1}(T_j) + \frac{\dot{Q}_c^{k=2}(T_j) - \dot{Q}_c^{k=1}(T_j)}{\mathrm{FP}_c^{k=2} - \mathrm{FP}_c^{k=1}} * \left[\mathrm{FP}_c(T_j) - \mathrm{FP}_c^{k=1}\right]$$

where,

$$\dot{Q}_c^{k=1}(T_j) = \dot{Q}_c^{k=1}(82) + \frac{\dot{Q}_c^{k=1}(95) - \dot{Q}_c^{k=1}(82)}{95 - 82} * (T_j - 82)$$

the space cooling capacity of the test unit at outdoor temperature T_j if operated at the Cooling Minimum Air Volume Rate, Btu/h.

$$\dot{Q}_c^{k=2}(T_j) = \dot{Q}_c^{k=2}(82) + \frac{\dot{Q}_c^{k=2}(95) - \dot{Q}_c^{k=2}(82)}{95 - 82} * (T_j - 82)$$

the space cooling capacity of the test unit at outdoor temperature T_j if operated at the Cooling Full-load Air Volume Rate, Btu/h.

b. For units where indoor blower speed is the primary control variable, $FP_c^{k=1}$ denotes the fan speed used during the required A_1 and B_1 Tests (see section 3.2.2.1), $FP_c^{k=2}$ denotes the fan speed used during the required A_2 and B_2 Tests, and $FP_c(T_j)$ denotes the fan speed used by the unit when the outdoor temperature equals T_j. For units where indoor air volume rate is the primary control variable, the three FP_c's are similarly defined only now being expressed in terms of air volume rates rather than fan speeds. Refer to sections 3.2.2.1, 3.1.4 to 3.1.4.2, and 3.3 regarding the definitions and calculations of $\dot{Q}_c^{k=1}(82)$, $\dot{Q}_c^{k=1}(95)$, $\dot{Q}_c^{k=2}(82)$, and $\dot{Q}_c^{k=2}(95)$.

Calculate $e_c(T_j)/N$ in Equation 4.1-1 using, Equation 4.1.2-3 $$\frac{e_c(T_j)}{N} = \frac{X(T_j) * \dot{E}_c(T_j)}{PLF_j} * \frac{n_j}{N}$$

where,

$PLF_j = 1 - C_D^c \cdot [1 - X(T_j)]$, the part load factor, dimensionless.

$\dot{E}_c(T_j)$ = the electrical power consumption of the test unit when operating at outdoor temperature T_j, W.

c. The quantities $X(T_j)$ and n_j/N are the same quantities as used in Equation 4.1.2–1.

d. Evaluate $\dot{E}_c(T_j)$ using,

$$\dot{E}_c(T_j) = \dot{E}_c^{k=1}(T_j) + \frac{\dot{E}_c^{k=2}(T_j) - \dot{E}_c^{k=1}(T_j)}{\mathrm{FP}_c^{k=2} - \mathrm{FP}_c^{k=1}} * [\mathrm{FP}_c(T_j) - \mathrm{FP}_c^{k=1}]$$

Where $$\dot{E}_c^{k=1}(T_j) = \dot{E}_c^{k=1}(82) + \frac{\dot{E}_c^{k=1}(95) - \dot{E}_c^{k=1}(82)}{95-82} * (T_j - 82)$$

the electrical power consumption of the test unit at outdoor temperature T_j if operated at the Cooling Minimum Air Volume Rate, W.

$$\dot{E}_c^{k=2}(T_j) = \dot{E}_c^{k=2}(82) + \frac{\dot{E}_c^{k=2}(95) - \dot{E}_c^{k=2}(82)}{95-82} * (T_j - 82)$$ the electrical power consumption of the test unit at outdoor temperature T_j if operated at the Cooling Full-load Air Volume Rate, W.

e. The parameters $FP_c^{k=1}$, and $FP_c^{k=2}$, and $FP_c(T_j)$ are the same quantities that are used when evaluating Equation 4.1.2–2. Refer to sections 3.2.2.1, 3.1.4 to 3.1.4.2, and 3.3 regarding the definitions and calculations of $\dot{E}_c^{k=1}(82)$, $\dot{E}_c^{k=1}(95)$, $\dot{E}_c^{k=2}(82)$, and $\dot{E}_c^{k=2}(95)$.

4.1.2.2 Units covered by section 3.2.2.2 where indoor blower capacity modulation is used to adjust the sensible to total cooling capacity ratio. Calculate SEER as specified in section 4.1.1.

4.1.3 SEER calculations for an air conditioner or heat pump having a two-capacity compressor. Calculate SEER using Equation 4.1–1. Evaluate the space cooling capacity, $\dot{Q}_c^{k=1}(T_j)$, and electrical power consumption, $\dot{E}_c^{k=1}(T_j)$, of the test unit when operating at low compressor capacity and outdoor temperature T_j using,

Equation 4.1.3-1 $$\dot{Q}_c^{k=1}(T_j) = \dot{Q}_c^{k=1}(67) + \frac{\dot{Q}_c^{k=1}(82) - \dot{Q}_c^{k=1}(67)}{82-67} * (T_j - 67)$$

Equation 4.1.3-2 $$\dot{E}_c^{k=1}(T_j) = \dot{E}_c^{k=1}(67) + \frac{\dot{E}_c^{k=1}(82) - \dot{E}_c^{k=1}(67)}{82-67} * (T_j - 67)$$

where $\dot{Q}_c^{k=1}(82)$ and $\dot{E}_c^{k=1}(82)$ are determined from the B_1 Test, $\dot{Q}_c^{k=1}(67)$ and $\dot{E}_c^{k=1}(67)$ are determined from the F_1 Test, and all four quantities are calculated as specified in section 3.3. Evaluate the space cooling capacity, $\dot{Q}_c^{k=2}(T_j)$, and electrical power consumption, $\dot{E}_c^{k=2}(T_j)$, of the test unit when operating at high compressor capacity and outdoor temperature T_j using, Equation 4.1.3-3 $\dot{Q}_c^{k=2}(T_j) = \dot{Q}_c^{k=2}(82) + \frac{\dot{Q}_c^{k=2}(95) - \dot{Q}_c^{k=2}(82)}{95-82} * (T_j - 82)$

Equation 4.1.3-4 $\dot{E}_c^{k=2}(T_j) = \dot{E}_c^{k=2}(82) + \frac{\dot{E}_c^{k=2}(95) - \dot{E}_c^{k=2}(82)}{95-82} * (T_j - 82)$

where $\dot{Q}_c^{k=2}(95)$ and $\dot{E}_c^{k=2}(95)$ are determined from the A_2 Test, $\dot{Q}_c^{k=2}(82)$, and $\dot{E}_c^{k=2}(82)$, are determined from the B_2Test, and all are calculated as specified in section 3.3.

The calculation of Equation 4.1–1 quantities $q_c(T_j)/N$ and $e_c(T_j)/N$ differs depending on whether the test unit would operate at low capacity (section 4.1.3.1), cycle between low and high capacity (section 4.1.3.2), or operate at high capacity (sections 4.1.3.3 and 4.1.3.4) in responding to the building load. For units that lock out low capacity operation at higher outdoor temperatures, the manufacturer must supply information regarding this temperature so that the appropriate equations are used. Use Equation 4.1–2 to calculate the building load, $BL(T_j)$, for each temperature bin.

4.1.3.1 Steady-state space cooling capacity at low compressor capacity is greater than or equal to the building cooling load at temperature T_j, $\dot{Q}_c^{k=1}(T_j) \geq BL(T_j)$.

$$\frac{q_c(T_j)}{N} = X^{k=1}(T_j) * \dot{Q}_c^{k=1}(T_j) * \frac{n_j}{N} \qquad \frac{e_c(T_j)}{N} = \frac{X^{k=1}(T_j) * \dot{E}_c^{k=1}(T_j)}{PLF_j} * \frac{n_j}{N}$$

where,

$X^{k=1}(T_j) = BL(T_j)/\dot{Q}_c^{k=1}(T_j)$, the cooling mode low capacity load factor for temperature bin j, dimensionless.

$PLF_j = 1 - C_D^c \cdot [1 - X^{k=1}(T_j)]$, the part load factor, dimensionless.

$\frac{n_j}{N}$ = fractional bin hours for the cooling season; the ratio of the number of hours during the cooling season when the outdoor temperature fell within the range represented by bin temperature T_j to the total number of hours in the cooling season, dimensionless.

Obtain the fractional bin hours for the cooling season, n_j/N, from Table 18. Use Equations 4.1.3-1 and 4.1.3-2, respectively, to evaluate $\dot{Q}_c^{k=1}(T_j)$ and $\dot{E}_c^{k=1}(T_j)$.

Obtain the fractional bin hours for the cooling season, n_j/N, from Table 18. Use Equations 4.1.3–1 and 4.1.3–2, respectively, to evaluate $\dot{Q}_c^{k=1}(T_j)$ and $\dot{E}_c^{k=1}(T_j)$.

TABLE 18—DISTRIBUTION OF FRACTIONAL HOURS WITHIN COOLING SEASON TEMPERATURE BINS

Bin number, j	Bin temperature range °F	Representative temperature for bin °F	Fraction of total temperature bin hours, n_j/N
1	65–69	67	0.214
2	70–74	72	0.231
3	75–79	77	0.216
4	80–84	82	0.161
5	85–89	87	0.104
6	90–94	92	0.052
7	95–99	97	0.018
8	100–104	102	0.004

4.1.3.2 Unit alternates between high (k=2) and low (k=1) compressor capacity to satisfy the building cooling load at temperature T_j, $\dot{Q}_c^{k=1}(T_j) < BL(T_j) < \dot{Q}_c^{k=2}(T_j)$.

$$\frac{q_c(T_j)}{N} = [X^{k=1}(T_j) * \dot{Q}_c^{k=1}(T_j) + X^{k=2}(T_j) * \dot{Q}_c^{k=2}(T_j)] * \frac{n_j}{N}$$

$$\frac{e_c(T_j)}{N} = [X^{k=1}(T_j) * \dot{E}_c^{k=1}(T_j) + X^{k=2}(T_j) * \dot{E}_c^{k=2}(T_j)] * \frac{n_j}{N}$$

where,

$X^{k=1}(T_j) = \frac{\dot{Q}_c^{k=2}(T_j) - BL(T_j)}{\dot{Q}_c^{k=2}(T_j) - \dot{Q}_c^{k=1}(T_j)}$ the cooling mode, low capacity load factor for temperature bin j, dimensionless.

$X^{k=2}(T_j) = 1 - X^{k=1}(T_j)$, the cooling mode, high capacity load factor for temperature bin j, dimensionless.

Obtain the fractional bin hours for the cooling season, n_j/N, from Table 18. Use Equations 4.1.3–1 and 4.1.3–2, respectively, to evaluate $\dot{Q}_c^{k=1}(T_j)$ and $\dot{E}_c^{k=1}(T_j)$. Use Equations 4.1.3–3 and 4.1.3–4, respectively, to evaluate $\dot{Q}_c^{k=2}(T_j)$ and $\dot{E}_c^{k=2}(T_j)$.

4.1.3.3 Unit only operates at high (k=2) compressor capacity at temperature T_j and its capacity is greater than the building cooling load, $BL(T_j) < Q_c^{k=2}(T_j)$. This section applies to units that lock out low compressor capacity operation at higher outdoor temperatures.

$$\frac{q_c(T_j)}{N} = X^{k=2}(T_j) * \dot{Q}_c^{k=2}(T_j) * \frac{n_j}{N} \qquad \frac{e_c(T_j)}{N} = \frac{X^{k=2}(T_j) * \dot{E}_c^{k=2}(T_j)}{PLF_j} * \frac{n_j}{N}$$

where,

$X^{k=2}(T_j) = BL(T_j)/\dot{Q}_c^{k=2}(T_j)$, the cooling mode high capacity load factor for temperature bin j, dimensionless.

$PLF_j = 1 - C_D^c(k = 2) * [1 - X^{k=2}(T_j)$ the part load factor, dimensionless.

Obtain the fraction bin hours for the cooling season, $\frac{n_j}{N}$, from Table 18. Use Equations 4.1.3-3 and 4.1.3-4, respectively, to evaluate $\dot{Q}_c^{k=2}(T_j)$ and $\dot{E}_c^{k=2}(T_j)$. If the C_2 and D_2 Tests described in section 3.2.3 and Table 6 are not conducted, set C_D^c (k=2) equal to the default value specified in section 3.5.3

4.1.3.4 Unit must operate continuously at high (k=2) compressor capacity at temperature T_j, $BL(T_j) \geq \dot{Q}_c^{k=2}(T_j)$.

$$\frac{q_c(T_j)}{N} = \dot{Q}_c^{k=2}(T_j) * \frac{n_j}{N} \qquad \frac{e_c(T_j)}{N} = \dot{E}_c^{k=2}(T_j) * \frac{n_j}{N}$$

Obtain the fractional bin hours for the cooling season, n_j/N, from Table 18. Use Equations 4.1.3–3 and 4.1.3–4, respectively, to evaluate $\dot{Q}_c^{k=2}(T_j)$ and $\dot{E}_c^{k=2}(T_j)$.

4.1.4 SEER calculations for an air conditioner or heat pump having a variable-speed compressor. Calculate SEER using Equation 4.1–1. Evaluate the space cooling capacity, $\dot{Q}_c^{k=1}(T_j)$, and electrical power consumption, $\dot{E}_c^{k=1}(T_j)$, of the test unit when operating at minimum compressor speed and outdoor temperature T_j. Use,

Equation 4.1.4-1 $$\dot{Q}_c^{k=1}(T_j) = \dot{Q}_c^{k=1}(67) + \frac{\dot{Q}_c^{k=1}(82) - \dot{Q}_c^{k=1}(67)}{82-67} * (T_j - 67)$$

Equation 4.1.4-2 $$\dot{E}_c^{k=1}(T_j) = \dot{E}_c^{k=1}(67) + \frac{\dot{E}_c^{k=1}(82) - \dot{E}_c^{k=1}(67)}{82-67} * (T_j - 67)$$

where $\dot{Q}_c^{k=1}(82)$ and $\dot{E}_c^{k=1}(82)$ are determined from the B_1 Test, $\dot{Q}_c^{k=1}(67)$ and $\dot{E}_c^{k=1}(67)$ are determined from the F1 Test, and all four quantities are calculated as specified in section 3.3. Evaluate the space cooling capacity, $\dot{Q}_c^{k=2}(T_j)$, and electrical power consumption, $\dot{E}_c^{k=2}(T_j)$, of the test unit when operating at maximum compressor speed and outdoor temperature T_j. Use Equations 4.1.3–3 and 4.1.3–4, respectively, where $\dot{Q}_c^{k=2}(95)$ and $\dot{E}_c^{k=2}(95)$ are determined from the A_2 Test, $\dot{Q}_c^{k=2}(82)$ and $\dot{E}_c^{k=2}(82)$ are determined from the B_2 Test, and all four quantities are calculated as specified in section 3.3. Calculate the space cooling capacity, $\dot{Q}_c^{k=v}(T_j)$, and electrical power consumption, $\dot{E}_c^{k=v}(T_j)$, of the test unit when operating at outdoor temperature T_j and the intermediate compressor speed used during the section 3.2.4 (and Table 7) E_V Test using,

$$M_Q = \left[\frac{\dot{Q}_c^{k=1}(82) - \dot{Q}_c^{k=1}(67)}{82-67} * (1-N_Q)\right] + \left[N_Q * \frac{\dot{Q}_c^{k=2}(95) - \dot{Q}_c^{k=2}(82)}{95-82}\right]$$

$$M_E = \left[\frac{\dot{E}_c^{k=1}(82) - \dot{E}_c^{k=1}(67)}{82-67} * (1-N_E)\right] + \left[N_E * \frac{\dot{E}_c^{k=2}(95) - \dot{E}_c^{k=2}(82)}{95-82}\right]$$

4.1.4.1 Steady-state space cooling capacity when operating at minimum compressor speed is greater than or equal to the building cooling load at temperature T_j, $\dot{Q}_c^{k=1}(T_j) \geq BL(T_j)$.

$$\frac{q_c(T_j)}{N} = X^{k=1}(T_j) * \dot{Q}_c^{k=1}(T_j) * \frac{n_j}{N} \qquad \frac{e_c(T_j)}{N} = \frac{X^{k=1}(T_j) * \dot{E}_c^{k=1}(T_j)}{PLF_j} * \frac{n_j}{N}$$

where,

$X^{k=1}(T_j) = BL(T_j)/\dot{Q}_c^{k=1}(T_j)$, the cooling mode minimum speed load factor for temperature bin j, dimensionless.

$PLF_j = 1 - C_D^c \cdot [1 - X^{k=1}(T_j)]$, the part load factor, dimensionless.

n_j/N = fractional bin hours for the cooling season; the ratio of the number of hours during the cooling season when the outdoor temperature fell within the range represented by bin temperature T_j to the total number of hours in the cooling season, dimensionless.

Obtain the fractional bin hours for the cooling season, n_j/N, from Table 18. Use Equations 4.1.3–1 and 4.1.3–2, respectively, to evaluate $\dot{Q}_c^{k=1}(T_j)$ and $\dot{E}_c^{k=1}(T_j)$.

4.1.4.2 Unit operates at an intermediate compressor speed (k=i) in order to match the building cooling load at temperature T_j, $\dot{Q}_c^{k=1}(T_j) < BL(T_j) < \dot{Q}_c^{k=2}(T_j)$.

$$\frac{q_c(T_j)}{N} = \dot{Q}_c^{k=1}(T_j) * \frac{n_j}{N} \qquad \frac{e_c(T_j)}{N} = \dot{E}_c^{k=1}(T_j) * \frac{n_j}{N}$$

where,

$\dot{Q}_c^{k=i}(T_j) = BL(T_j)$, the space cooling capacity delivered by the unit in matching the building load at temperature T_j, Btu/h.

The matching occurs with the unit operating at compressor speed k = i.

$$\dot{E}_c^{k=1}(T_j) = \frac{\dot{Q}_c^{k=1}(T_j)}{EER^{k=1}(T_j)}$$ the electrical power input required by the test unit when operating at a compressor speed of k = i and temperature T_j, W.

the electrical power input required by the test unit when operating at a compressor speed of k = i and temperature T_j, W.

$EER^{k=i}(T_j)$ = the steady-state energy efficiency ratio of the test unit when operating at a compressor speed of k = i and temperature T_j, Btu/h per W.

Obtain the fractional bin hours for the cooling season, n_j/N, from Table 18. For each temperature bin where the unit operates at an intermediate compressor speed, determine the energy efficiency ratio $EER^{k=i}(T_j)$ using,

$EER^{k=i}(T_j) = A + B \cdot T_j + C \cdot T_j^2$.

For each unit, determine the coefficients A, B, and C by conducting the following calculations once:

$$D = \frac{T_2^2 - T_1^2}{T_v^2 - T_1^2} \qquad B = \frac{EER^{k=1}(T_1) - EER^{k=2}(T_2) - D * [EER^{k=1}(T_1) - EER^{k=v}(T_v)]}{T_1 - T_2 - D * (T_1 - T_v)}$$

$$C = \frac{EER^{k=1}(T_1) - EER^{k=2}(T_2) - B * (T_1 - T_2)}{T_1^2 - T_2^2} \qquad A = EER^{k=1}(T_2) - B * T_2 - C * T_2^2$$

where,

T_1 = the outdoor temperature at which the unit, when operating at minimum compressor speed, provides a space cooling capacity that is equal to the building load ($\dot{Q}_c^{k=1}(T_1) = BL(T_1)$), °F. Determine T_1 by equating Equations 4.1.3–1 and 4.1–2 and solving for outdoor temperature.

T_v = the outdoor temperature at which the unit, when operating at the intermediate compressor speed used during the section 3.2.4 E_V Test, provides a space cooling capacity that is equal to the building load ($\dot{Q}_c^{k=v}(T_v) = BL(T_v)$), °F. Determine T_v by equating Equations 4.1.4–1 and 4.1–2 and solving for outdoor temperature.

T_2 = the outdoor temperature at which the unit, when operating at maximum compressor speed, provides a space cooling capacity that is equal to the building load ($\dot{Q}_c^{k=2}(T_2) = BL(T_2)$), °F. Determine T_2 by equating Equations 4.1.3–3 and 4.1–2 and solving for outdoor temperature.

$$EER^{k=1}(T_1) = \frac{\dot{Q}_c^{k=1}(T_j)[Eqn. 4.1.4-1, substituting\ T_1\ for\ T_j]}{\dot{E}_c^{k=1}(T_j)[Eqn. 4.1.4-2, substituting\ T_1\ for\ T_j]}, Btu/h \text{ per } W$$

$$EER^{k=v}(T_v) = \frac{\dot{Q}_c^{k=v}(T_v)[Eqn. 4.1.4-3, substituting\ T_v\ for\ T_j]}{\dot{E}_c^{k=v}(T_v)[Eqn. 4.1.4-4, substituting\ T_v\ for\ T_j]}, Btu/h \text{ per } W$$

$$EER^{k=2}(T_2) = \frac{\dot{Q}_c^{k=2}(T_2)[Eqn. 4.1.3-3, substituting\ T_2\ for\ T_j]}{\dot{E}_c^{k=2}(T_2)[Eqn. 4.1.3-4, substituting\ T_2\ for\ T_j]}, Btu/h \text{ per } W$$

4.1.4.3 Unit must operate continuously at maximum (k=2) compressor speed at temperature Tj, $BL(T_j) \geq \dot{Q}_c^{k=2}(T_j)$. Evaluate the Equation 4.1–1 quantities

$$\frac{q_c(T_j)}{N} \text{ and } \frac{e_c(T_j)}{N}$$

as specified in section 4.1.3.4 with the understanding that $\dot{Q}_c^{k=2}(T_j)$ and $\dot{E}_c^{k=2}(T_j)$ correspond to maximum compressor speed operation and are derived from the results of the tests specified in section 3.2.4.

4.1.5 SEER calculations for an air conditioner or heat pump having a single indoor unit with multiple blowers. Calculate SEER using Eq. 4.1–1, where $q_c(Tj)/N$ and $e_c(Tj)/N$ are evaluated as specified in applicable below subsection.

4.1.5.1 For multiple blower systems that are connected to a lone, single-speed outdoor unit. a. Calculate the space cooling capacity, $\dot{Q}^{k=1}(Tj)$, and electrical power consumption, $\dot{E}^{k=1}(Tj)$, of the test unit when operating at the cooling minimum air volume rate and outdoor temperature T_j using the equations given in section 4.1.2.1. Calculate the space cooling capacity, $\dot{Q}^{k=2}(Tj)$, and electrical power consumption, $\dot{E}^{k=2}(Tj)$, of the test unit when operating at the cooling full-load air volume rate and outdoor temperature T_j using the equations given in section 4.1.2.1. In evaluating the section 4.1.2.1 equations, determine the quantities $\dot{Q}^{k=1}(82)$ and $\dot{E}^{k=1}(82)$ from the B1 Test, $\dot{Q}^{k=1}(95)$ and $\dot{E}^{k=1}(82)$ from the Al Test, $\dot{Q}^{k=2}(82)$ and $\dot{E}^{k=2}(82)$ from the B2 Test, and $\dot{Q}^{k=2}(95)$ and $\dot{E}^{k=2}(95)$ from the A2 Test. Evaluate all eight quantities as specified in section 3.3. Refer to section 3.2.2.1 and Table 5 for additional information on the four referenced laboratory tests. b. Determine the cooling mode cyclic degradation coefficient, CD_c, as per sections 3.2.2.1 and 3.5 to 3.5.3. Assign this same value to $CD_c(K=2)$. c. Except for using the above values of $\dot{Q}^{k=1}(Tj)$, $\dot{E}^{k=1}(Tj)$, $\dot{E}^{k=2}(Tj)$, $\dot{Q}^{k=2}(Tj)$, CD_c, and CD_c (K=2), calculate the quantities $q_c(T_j)/N$ and $e_c(T_j)/N$ as specified in section 4.1.3.1 for cases where $\dot{Q}^{k=1}(Tj) \geq BL(T_j)$. For all other outdoor bin temperatures, T_j, calculate $q_c(Tj)/N$ and $e_c(Tj)/N$ as specified in section 4.1.3.3 if $\dot{Q}^{k=2}(Tj) > BL(T_j)$ or as specified in section 4.1.3.4 if $\dot{Q}^{k=2}(Tj) \leq BL(T_j)$.

4.1.5.2 For multiple blower systems that are connected to either a lone outdoor unit having a two-capacity compressor or to two separate but identical model single-speed outdoor units. Calculate the quantities $q_c(Tj)/N$ and $e_c(Tj)/N$ as specified in section 4.1.3.

4.2 Heating Seasonal Performance Factor (HSPF) Calculations. Unless an approved alternative efficiency determination method is used, as set forth in 10 CFR 429.70(e), HSPF must be calculated as follows: Six generalized climatic regions are depicted in Figure 1 and otherwise defined in Table 19. For each of these regions and for each applicable standardized design heating requirement, evaluate the heating seasonal performance factor using,

$$\text{Equation 4.2-1} \qquad HSPF = \frac{\sum_j^J n_j * BL(T_j)}{\sum_j^J e_h(T_j) + \sum_j^J RH(T_j)} * F_{def} = \frac{\sum_j^J \left[\frac{n_j}{N} * BL(T_j)\right]}{\sum_j^J \frac{e_h(T_j)}{N} + \sum_j^J \frac{RH(T_j)}{N}} * F_{def}$$

Where,

$e_h(T_j)/N$ = The ratio of the electrical energy consumed by the heat pump during periods of the space heating season when the outdoor temperature fell within the range represented by bin temperature T_j to the total number of hours in the heating season (N), W. For heat pumps having a heat comfort controller, this ratio may also include electrical energy used by resistive elements to maintain a minimum air delivery temperature (see 4.2.5).

$RH(T_j)/N$ = The ratio of the electrical energy used for resistive space heating during periods when the outdoor temperature fell within the range represented by bin temperature T_j to the total number of hours in the heating season (N), W. Except as noted in section 4.2.5, resistive space heating is modeled as being used to meet that portion of the building load that the heat pump does not meet because of insufficient capacity or because the heat pump automatically turns off at the lowest outdoor temperatures. For heat pumps having a heat comfort controller, all or part of the electrical energy used by resistive heaters at a particular bin temperature may be reflected in $e_h(T_j)/N$ (see 4.2.5).

T_j = the outdoor bin temperature, °F. Outdoor temperatures are ''binned'' such that calculations are only performed based one temperature within the bin. Bins of 5 °F are used.

n_j/N = Fractional bin hours for the heating season; the ratio of the number of hours during the heating season when the outdoor temperature fell within the range represented by bin temperature T_j to the total number of hours in the heating season, dimensionless. Obtain n_j/N values from Table 19.

j = the bin number, dimensionless.

J = for each generalized climatic region, the total number of temperature bins, dimensionless. Referring to Table 19, J is the highest bin number (j) having a nonzero entry for the fractional bin hours for the generalized climatic region of interest.

F_{def} = the demand defrost credit described in section 3.9.2, dimensionless.

$BL(T_j)$ = the building space conditioning load corresponding to an outdoor temperature of T_j; the heating season building load also depends on the generalized climatic region's outdoor design temperature and the design heating requirement, Btu/h.

TABLE 19—GENERALIZED CLIMATIC REGION INFORMATION

Region Number	I	II	III	IV	V	VI
Heating Load Hours, HLH	750	1250	1750	2250	2750	*2750
Outdoor Design Temperature, T_{OD}	37	27	17	5	−10	30
j T_j (°F)	Fractional Bin Hours, n_j/N					
1 62	.291	.215	.153	.132	.106	.113
2 57	.239	.189	.142	.111	.092	.206
3 52	.194	.163	.138	.103	.086	.215
4 47	.129	.143	.137	.093	.076	.204
5 42	.081	.112	.135	.100	.078	.141
6 37	.041	.088	.118	.109	.087	.076
7 32	.019	.056	.092	.126	.102	.034
8 27	.005	.024	.047	.087	.094	.008
9 22	.001	.008	.021	.055	.074	.003
10 17	0	.002	.009	.036	.055	0
11 12	0	0	.005	.026	.047	0
12 7	0	0	.002	.013	.038	0
13 2	0	0	.001	.006	.029	0
14 −3	0	0	0	.002	.018	0
15 −8	0	0	0	.001	.010	0
16 −13	0	0	0	0	.005	0
17 −18	0	0	0	0	.002	0
18 −23	0	0	0	0	.001	0

*Pacific Coast Region.

Evaluate the building heating load using

$$\text{Equation 4.2-2} \qquad BL(T_j) = \frac{(65-T_j)}{65-T_{OD}} * C * DHR$$

Where,

T_{OD} = the outdoor design temperature, °F. An outdoor design temperature is specified for each generalized climatic region in Table 19.

C = 0.77, a correction factor which tends to improve the agreement between calculated and measured building loads, dimensionless.

DHR = the design heating requirement (see section 1.2, Definitions), Btu/h.

Calculate the minimum and maximum design heating requirements for each generalized climatic region as follows:

$$DHR_{min} = \begin{Bmatrix} \dot{Q}_h^k(47) * \left[\dfrac{65 - T_{OD}}{60}\right], for\ Regions\ I, II, III, IV, \&\ VI \\ \dot{Q}_h^k(47), \qquad for\ Region\ V \end{Bmatrix}$$

and

$$DHR_{max} = \begin{Bmatrix} 2 * \dot{Q}_h^k(47) * \left[\dfrac{65 - T_{OD}}{60}\right], for\ Regions\ I, II, III, IV, \&\ VI \\ 2.2 * \dot{Q}_h^k(47), \qquad for\ Region\ V \end{Bmatrix}$$

Rounded to the nearest standardized DHR given in Table 19

Where $\dot{Q}_h^k(47)$ is expressed in units of Btu/h and otherwise defined as follows:

1. For a single-speed heat pump tested as per section 3.6.1, $\dot{Q}_h^k(47) = \dot{Q}_h(47)$, the space heating capacity determined from the H1 Test.

2. For a variable-speed heat pump, a section 3.6.2 single-speed heat pump, or a two-capacity heat pump not covered by item 3, $\dot{Q}_n^k(47) = \dot{Q}_n^{k=2}(47)$, the space heating capacity determined from the $H1_2$ Test.

3. For two-capacity, northern heat pumps (see section 1.2, Definitions), $\dot{Q}^k{}_h(47) = \dot{Q}^{k=1}{}_h(47)$, the space heating capacity determined from the $H1_1$ Test.

If the optional $H1_N$ Test is conducted on a variable-speed heat pump, the manufacturer has the option of defining $\dot{Q}^k{}_h(47)$ as specified above in item 2 or as $\dot{Q}^k{}_h(47)=\dot{Q}^{k=N}{}_h(47)$, the space heating capacity determined from the $H1_N$ Test.

For all heat pumps, HSPF accounts for the heating delivered and the energy consumed by auxiliary resistive elements when operating below the balance point. This condition occurs when the building load exceeds the space heating capacity of the heat pump condenser. For HSPF calculations for all heat pumps, see either section 4.2.1, 4.2.2, 4.2.3, or 4.2.4, whichever applies.

For heat pumps with heat comfort controllers (see section 1.2, Definitions), HSPF also accounts for resistive heating contributed when operating above the heat-pump-plus-comfort-controller balance point as a result of maintaining a minimum supply temperature. For heat pumps having a heat comfort controller, see section 4.2.5 for the additional steps required for calculating the HSPF.

TABLE 20—STANDARDIZED DESIGN HEATING REQUIREMENTS (BTU/H)

5,000	25,000	50,000	90,000
10,000	30,000	60,000	100,000
15,000	35,000	70,000	110,000
20,000	40,000	80,000	130,000

4.2.1 Additional steps for calculating the HSPF of a heat pump having a single-speed compressor that was tested with a fixed-speed indoor blower installed, a constant-air-volume-rate indoor blower installed, or with no indoor blower installed.

$$\text{Equation 4.2.1-1} \quad \frac{e_h(T_j)}{N} = \frac{X(T_j)*\dot{E}_h(T_j)*\delta(T_j)}{PLF_j} * \frac{n_j}{N}$$

$$\text{Equation 4.2.1-2} \quad \frac{RH(T_j)}{N} = \frac{BL(T_j)-[X(T_j)*\dot{Q}_h(T_j)*\delta(T_j)]}{3.413\frac{Btu/h}{W}} * \frac{n_j}{N}$$

where,

$$X(T_j) = \begin{Bmatrix} BL(T_j)/\dot{Q}_h(T_j) \\ or \\ 1 \end{Bmatrix}$$

whichever is less; the heating mode load factor for temperature bin j, dimensionless.

$\dot{Q}_h(T_j)$ = the space heating capacity of the heat pump when operating at outdoor temperature T_j, Btu/h.

$\dot{E}_h(T_j)$ = the electrical power consumption of the heat pump when operating at outdoor temperature T_j, W.

$\delta(T_j)$ = the heat pump low temperature cut-out factor, dimensionless.

$PLF_j = 1 - \dot{C}_D^h \cdot [1 - X(T_j)]$ the part load factor, dimensionless.

Use Equation 4.2–2 to determine $BL(T_j)$. Obtain fractional bin hours for the heating season, n_j/N, from Table 19.

Determine the low temperature cut-out factor using

$$\text{Equation 4.2.1-3} \quad \delta(T_j) = \begin{Bmatrix} 0, if\ T_j \le T_{off}\ and\ \frac{\dot{Q}_h(T_j)}{3.413*\dot{E}_h(T_j)} < 1 \\ 1/2, if\ T_{off} < T_j \le T_{on}\ and\ \frac{\dot{Q}_h(T_j)}{3.413*\dot{E}_h(T_j)} \ge 1 \\ 1, if\ T_j > T_{on}\ and\ \frac{\dot{Q}_h(T_j)}{3.413*\dot{E}_h(T_j)} \ge 1 \end{Bmatrix}$$

where,

T_{off} = the outdoor temperature when the compressor is automatically shut off, °F. (If no such temperature exists, T_j is always greater than T_{off} and T_{on}).

T_{on} = the outdoor temperature when the compressor is automatically turned back on, if applicable, following an automatic shut-off, °F.

Calculate $\dot{Q}_h(T_j)$ and $\dot{E}_h(T_j)$ using,

$$\text{Equation 4.2.1-4} \quad \dot{Q}_h(T_j) = \begin{cases} \dot{Q}_h(17) + \frac{[\dot{Q}_h(47)-\dot{Q}_h(17)]*(T_j-17)}{47-17},\ if\ T_j \ge 45\ °F\ or\ T_j \le 17\ °F \\ \dot{Q}_h(17) + \frac{[\dot{Q}_h(35)-\dot{Q}_h(17)]*(T_j-17)}{35-17},\ if\ 17\ °F < T_j < 45\ °F \end{cases}$$

Equation 4.2.1-5

$$\dot{E}_h(T_j) = \begin{cases} \dot{E}_h(17) + \dfrac{[\dot{E}_h(47) - \dot{E}_h(17)] * (T_j - 17)}{47 - 17}, & if\ T_j \geq 45\,°\mathrm{F}\ or\ T_j \leq 17\,°\mathrm{F} \\ \dot{E}_h(17) + \dfrac{[\dot{E}_h(35) - \dot{E}_h(17)] * (T_j - 17)}{35 - 17}, & if\ 17\,°\mathrm{F} < T_j < 45\,°\mathrm{F} \end{cases}$$

where $\dot{Q}_h(47)$ and $\dot{E}_h(47)$ are determined from the H1 Test and calculated as specified in section 3.7; $\dot{Q}_h(35)$ and $\dot{E}_h(35)$ are determined from the H2 Test and calculated as specified in section 3.9.1; and $\dot{Q}_h(17)$ and $\dot{E}_h(17)$ are determined from the H3 Test and calculated as specified in section 3.10.

4.2.2 Additional steps for calculating the HSPF of a heat pump having a single-speed compressor and a variable-speed, variable-air-volume-rate indoor blower. The manufacturer must provide information about how the indoor air volume rate or the indoor blower speed varies over the outdoor temperature range of 65°F to −23°F. Calculate the quantities

$$\frac{e_h(T_j)}{N} \text{ and } \frac{RH(T_j)}{N}$$

in Equation 4.2–1 as specified in section 4.2.1 with the exception of replacing references to the H1C Test and section 3.6.1 with the H1C$_1$ Test and section 3.6.2. In addition, evaluate the space heating capacity and electrical power consumption of the heat pump $\dot{Q}_h(T_j)$ and $\dot{E}_h(T_j)$ using

Equation 4.2.2-1 $$\dot{Q}_h(T_j) = \dot{Q}_h^{k=1}(T_j) + \frac{\dot{Q}_h^{k=2}(T_j) - \dot{Q}_h^{k=1}(T_j)}{\mathrm{FP}_h^{k=2} - \mathrm{FP}_h^{k=1}} * [\mathrm{FP}_h(T_j) - \mathrm{FP}_h^{k=1}]$$

Equation 4.2.2-2 $$\dot{E}_h(T_j) = \dot{E}_h^{k=1}(T_j) + \frac{\dot{E}_h^{k=2}(T_j) - \dot{E}_h^{k=1}(T_j)}{\mathrm{FP}_h^{k=2} - \mathrm{FP}_h^{k=1}} * [\mathrm{FP}_h(T_j) - \mathrm{FP}_h^{k=1}]$$

where the space heating capacity and electrical power consumption at both low capacity (k=1) and high capacity (k=2) at outdoor temperature Tj are determined using

Equation 4.2.2-3 $$\dot{Q}_h^k(T_j) = \begin{cases} \dot{Q}_h^k(17) + \dfrac{[\dot{Q}_h^k(47) - \dot{Q}_h^k(17)] * (T_j - 17)}{47 - 17}, & if\ T_j \geq 45\,°\mathrm{F}\ or\ T_j \leq 17\,°\mathrm{F} \\ \dot{Q}_h^k(17) + \dfrac{[\dot{Q}_h^k(35) - \dot{Q}_h^k(17)] * (T_j - 17)}{35 - 17}, & if\ 17\,°\mathrm{F} < T_j < 45\,°\mathrm{F} \end{cases}$$

Equation 4.2.2-4

$$\dot{E}_h^k(T_j) = \begin{cases} \dot{E}_h^k(17) + \dfrac{[\dot{E}_h^k(47) - \dot{E}_h^k(17)] * (T_j - 17)}{47 - 17}, & if\ T_j \geq 45\,°\mathrm{F}\ or\ T_j \leq 17\,°\mathrm{F} \\ \dot{E}_h^k(17) + \dfrac{[\dot{E}_h^k(35) - \dot{E}_h^k(17)] * (T_j - 17)}{35 - 17}, & if\ 17\,°\mathrm{F} < T_j < 45\,°\mathrm{F} \end{cases}$$

For units where indoor blower speed is the primary control variable, $\mathrm{FP}_h^{k=1}$ denotes the fan speed used during the required H1$_1$ and H3$_1$ Tests (see Table 11), $\mathrm{FP}_h^{k=2}$ denotes the fan speed used during the required H1$_2$, H2$_2$, and H3$_2$ Tests, and $\mathrm{FP}_h(T_j)$ denotes the fan speed used by the unit when the outdoor temperature equals T_j. For units where indoor air volume rate is the primary control variable, the three FP$_h$'s are similarly defined only now being expressed in terms of air volume rates rather than fan speeds. Determine $\dot{Q}_h^{k=1}(47)$ and $\dot{E}_h^{k=1}(47)$ from the H1$_1$ Test, and $\dot{Q}_h^{k=2}(47)$ and $\dot{E}_h^{k=2}(47)$ from the H1$_2$ Test. Calculate all four quantities as specified in section 3.7. Determine $\dot{Q}_h^{k=1}(35)$ and $\dot{E}_h^{k=1}(35)$ as specified in section 3.6.2; determine $\dot{Q}_h^{k=2}(35)$ and $\dot{E}_h^{k=2}(35)$ and from the H2$_2$ Test and the calculation specified in section 3.9. Determine $\dot{Q}_h^{k=1}(17)$ and $\dot{E}_h^{k=1}(17$ from the H3$_1$ Test, and $\dot{Q}_h^{k=2}(17)$ and $\dot{E}_h^{k=2}(17)$ from the H3$_2$ Test. Calculate all four quantities as specified in section 3.10.

4.2.3 Additional steps for calculating the HSPF of a heat pump having a two-capacity compressor. The calculation of the Equation 4.2–1 quantities differ depending upon whether the heat pump would operate at low capacity (section 4.2.3.1), cycle between low and high capacity (Section 4.2.3.2), or operate at high capacity (sections 4.2.3.3 and 4.2.3.4) in responding to the building load. For heat pumps that lock out low capacity operation at low outdoor temperatures, the manufacturer must supply information regarding the cutoff temperature(s) so that the appropriate equations can be selected.

$$\frac{e_h(T_j)}{N} \text{ and } \frac{RH(T_j)}{N}$$

a. Evaluate the space heating capacity and electrical power consumption of the heat pump when operating at low compressor capacity and outdoor temperature T_j using

$$\dot{Q}_h^{k=1}(T_j) = \begin{cases} \dot{Q}_h^{k=1}(47) + \frac{[\dot{Q}_h^{k=1}(62) - \dot{Q}_h^{k=1}(47)] * (T_j - 47)}{62-47}, & if\ T_j \geq 40\ °F \\ \dot{Q}_h^{k=1}(17) + \frac{[\dot{Q}_h^{k=1}(35) - \dot{Q}_h^{k=1}(17)] * (T_j - 17)}{35-17}, & if\ 17\ °F \leq T_j < 40\ °F \\ \dot{Q}_h^{k=1}(17) + \frac{[\dot{Q}_h^{k=1}(47) - \dot{Q}_h^{k=1}(17)] * (T_j - 17)}{47-17}, & if\ T_j < 17\ °F \end{cases}$$

$$\dot{E}_h^{k=1}(T_j) = \begin{cases} \dot{E}_h^{k=1}(47) + \frac{[\dot{E}_h^{k=1}(62) - \dot{E}_h^{k=1}(47)] * (T_j - 47)}{62-47}, & if\ T_j \geq 40\ °F \\ \dot{E}_h^{k=1}(17) + \frac{[\dot{E}_h^{k=1}(35) - \dot{E}_h^{k=1}(17)] * (T_j - 17)}{35-17}, & if\ 17\ °F \leq T_j < 40\ °F \\ \dot{E}_h^{k=1}(17) + \frac{[\dot{E}_h^{k=1}(47) - \dot{E}_h^{k=1}(17)] * (T_j - 17)}{47-17}, & if\ T_j < 17\ °F \end{cases}$$

b. Evaluate the space heating capacity and electrical power consumption ($\dot{Q}_h^{k=2}(T_j)$ and $\dot{E}_h^{k=2}(T_j)$) of the heat pump when operating at high compressor capacity and outdoor temperature Tj by solving Equations 4.2.2–3 and 4.2.2–4, respectively, for k=2. Determine $\dot{Q}_h^{k=1}(62)$ and $\dot{E}_h^{k=1}(62)$ from the $H0_1$ Test, $\dot{Q}_h^{k=1}(47)$ and $\dot{E}_h^{k=1}(47)$ from the $H1_1$ Test, and $\dot{Q}_h^{k=2}(47)$ and $\dot{E}_h^{k=2}(47)$ from the $H1_2$ Test. Calculate all six quantities as specified in section 3.7. Determine $\dot{Q}_h^{k=2}(35)$ and $\dot{E}_h^{k=2}(35)$ from the $H2_2$ Test and, if required as described in section 3.6.3, determine $\dot{Q}_h^{k=1}(35)$ and $\dot{E}_h^{k=1}(35)$ from the $H2_1$ Test. Calculate the required 35°F quantities as specified in section 3.9. Determine $\dot{Q}_h^{k=2}(17)$ and $\dot{E}_h^{k=2}(17)$ from the $H3_2$ Test and, if required as described in section 3.6.3, determine $\dot{Q}_h^{k=1}(17)$ and $\dot{E}_h^{k=1}(17)$ from the $H3_1$ Test. Calculate the required 17 °F quantities as specified in section 3.10.

4.2.3.1 Steady-state space heating capacity when operating at low compressor capacity is greater than or equal to the building heating load at temperature T_j, $\dot{Q}_h^{k=1}(T_j) \geq BL(T_j)$.

$$\text{Equation 4.2.3-1} \quad \frac{e_h(T_j)}{N} = \frac{X^{k=1}(T_j) * \dot{E}_h^{k=1}(T_j) * \delta(T_j)}{PLF_j} * \frac{n_j}{N}$$

$$\text{Equation 4.2.3-2} \quad \frac{RH(T_j)}{N} = \frac{BL(T_j) * [1 - \delta(T_j)]}{3.413 \frac{Btu/h}{W}} * \frac{n_j}{N}$$

Where,

$X^{k=1}(T_j) = BL(T_j) / \dot{Q}_h^{k=1}(T_j)$, the heating mode low capacity load factor for temperature bin *j*, dimensionless.

$PLF_j = 1 - C_D^h \cdot [1 - X^{k=1}(T_j)]$, the part load factor, dimensionless.

$\delta'(T_j)$ = the low temperature cutoff factor, dimensionless.

Determine the low temperature cut-out factor using

$$\text{Equation 4.2.3-3} \quad \delta(T_j) = \begin{cases} 0, & if\ T_j \leq T_{off} \\ 1/2, & if\ T_{off} < T_j \leq T_{on} \\ 1, & if\ T_j > T_{on} \end{cases}$$

Where T_{off} and T_{on} are defined in section 4.2.1. Use the calculations given in section 4.2.3.3, and not the above, if:

(a) The heat pump locks out low capacity operation at low outdoor temperatures and

(b) T_j is below this lockout threshold temperature.

4.2.3.2 Heat pump alternates between high (k=2) and low (k=1) compressor capacity to satisfy the building heating load at a temperature T_j, $\dot{Q}_h^{k=1}(T_j) < BL(T_j) < \dot{Q}_h^{k=2}(T_j)$.

Calculate $\frac{RH(T_j)}{N}$ using Equation 4.2.3-2. Evaluate $\frac{e_h(T_j)}{N}$ using

$$\frac{e_h(T_j)}{N} = [X^{k=1}(T_j) * \dot{E}_h^{k=1}(T_j) + X^{k=2}(T_j) * \dot{E}_h^{k=2}(T_j)] * \delta(T_j) * \frac{n_j}{N}$$

Where,

$$X^{k=1}(T_j) = \frac{\dot{Q}_h^{k=2}(T_j) - BL(T_j)}{\dot{Q}_h^{k=2}(T_j) - \dot{Q}_h^{k=1}(T_j)}$$

$X^{k=2}(T_j) = 1 - X^{k=1}(T_j)$ the heating mode, high capacity load factor for temperature bin $_j$, dimensionless.

Determine the low temperature cut-out factor, $\delta'(T_j)$, using Equation 4.2.3–3.

4.2.3.3 Heat pump only operates at high (k=2) compressor capacity at temperature T_j and its capacity is greater than the building heating load, $BL(T_j) < \dot{Q}_h^{k=2}(T_j)$. This section applies to units that lock out low compressor capacity operation at low outdoor temperatures.

Calculate $\frac{RH(T_j)}{N}$ using Equation 4.2.3-2. Evaluate $\frac{e_h(T_j)}{N}$ using

$$\frac{e_h(T_j)}{N} = \frac{X^{k=2}(T_j) * \dot{E}_h^{k=2}(T_j) * \delta(T_j)}{PLF_j} * \frac{n_j}{N}$$

Where,

$X^{k=2}(T_j) = BL(T_j)/\dot{Q}_h^{k=2}(T_j)$. $PLF_j = 1 - C_D^h(k = 2) * [1 - X^{k=2}(T_j)$

If the H1C$_2$ Test described in section 3.6.3 and Table 12 is not conducted, set C_D^h (k=2) equal to the default value specified in section 3.8.1.

Determine the low temperature cut-out factor, $\delta(T_j)$, using Equation 4.2.3–3.

4.2.3.4 Heat pump must operate continuously at high (k=2) compressor capacity at temperature T_j, $BL(T_j) \geq \dot{Q}_h^{k=2}(T_j)$.

$$\frac{e_h(T_j)}{N} = \dot{E}_h^{k=2}(T_j) * \delta'(T_j) * \frac{n_j}{N} \qquad \frac{RH(T_j)}{N} = \frac{BL(T_j) * [\dot{Q}_h^{k=2}(T_j) * \delta\prime(T_j)]}{3.413 \frac{Btu/h}{W}} * \frac{n_j}{N}$$

Where

$$\delta'(T_j) = \begin{cases} 0, & if\ T_j \leq T_{off}\ or\ \frac{\dot{Q}_h^{k=2}(T_j)}{3.413 * \dot{E}_h^{k=2}(T_j)} < 1 \\ 1/2, & if\ T_{off} < T_j \leq T_{on}\ and\ \frac{\dot{Q}_h^{k=2}(T_j)}{3.413 * \dot{E}_h^{k=2}(T_j)} \geq 1 \\ 1, & if\ T_j > T_{on}\ and\ \frac{\dot{Q}_h^{k=2}(T_j)}{3.413 * \dot{E}_h^{k=2}(T_j)} \geq 1 \end{cases}$$

4.2.4 Additional steps for calculating the HSPF of a heat pump having a variable-speed compressor. Calculate HSPF using Equation 4.2–1. Evaluate the space heating capacity, $\dot{Q}_h^{k=1}(T_j)$, and electrical power consumption, $\dot{E}_h^{k=1}(T_j)$, of the heat pump when operating at minimum compressor speed and outdoor temperature T_j using

Equation 4.2.4-1 $$\dot{Q}_h^{k=1}(T_j) = \dot{Q}_h^{k=1}(47) + \frac{\dot{Q}_h^{k=1}(62) - \dot{Q}_h^{k=1}(47)}{62-47} * (T_j - 47)$$

Equation 4.2.4-2 $$\dot{E}_h^{k=1}(T_j) = \dot{E}_h^{k=1}(47) + \frac{\dot{E}_h^{k=1}(62) - \dot{E}_h^{k=1}(47)}{62-47} * (T_j - 47)$$

Where $\dot{Q}_h^{k=1}(62)$ and $\dot{E}_h^{k=1}(62)$ are determined from the $H0_1$ Test, $\dot{Q}_h^{k=1}(47)$ and $\dot{E}_h^{k=1}(47)$ are determined from the $H1_1$ Test, and all four quantities are calculated as specified in section 3.7. Evaluate the space heating capacity, $\dot{Q}_h^{k=2}(T_j)$, and electrical power consumption, $\dot{E}_h^{k=2}(T_j)$, of the heat pump when operating at maximum compressor speed and outdoor temperature T_j by solving Equations 4.2.2–3 and 4.2.2–4, respectively, for k=2. Determine the Equation 4.2.2–3 and 4.2.2–4 quantities $\dot{Q}_h^{k=2}(47)$ and $\dot{E}_h^{k=2}(47)$ from the $H1_2$ Test and the calculations specified in section 3.7. Determine $\dot{Q}_h^{k=2}(35)$ and $\dot{E}_h^{k=2}(35)$ from the $H2_2$ Test and the calculations specified in section 3.9 or, if the $H2_2$ Test is not conducted, by conducting the calculations specified in section 3.6.4. Determine $\dot{Q}_h^{k=2}(17)$ and $\dot{E}_h^{k=2}(17)$ from the $H3_2$ Test and the calculations specified in section 3.10. Calculate the space heating capacity, $\dot{Q}_h^{k=v}(T_j)$, and electrical power consumption, $\dot{E}_h^{k=v}(T_j)$, of the heat pump when operating at outdoor temperature T_j and the intermediate compressor speed used during the section 3.6.4 $H2_V$ Test using

Equation 4.2.4-3 $$\dot{Q}_h^{k=v}(T_j) = \dot{Q}_h^{k=v}(35) + M_Q * (T_j - 35)$$

Equation 4.2.4-4 $$\dot{E}_h^{k=v}(T_j) = \dot{E}_h^{k=v}(35) + M_E * (T_j - 35)$$

Where $\dot{Q}_h^{k=v}(35)$ and $\dot{E}_h^{k=v}(35)$ are determined from the $H2_V$ Test and calculated as specified in section 3.9. Approximate the slopes of the k=v intermediate speed heating capacity and electrical power input curves, M_Q and M_E, as follows:

$$M_Q = \left[\frac{\dot{Q}_h^{k=1}(62) - \dot{Q}_h^{k=1}(47)}{62 - 47} * (1 - N_Q)\right] + \left[N_Q * \frac{\dot{Q}_h^{k=2}(35) - \dot{Q}_h^{k=2}(17)}{35 - 17}\right]$$

$$M_E = \left[\frac{\dot{E}_h^{k=1}(62) - \dot{E}_h^{k=1}(47)}{62 - 47} * (1 - N_E)\right] + \left[N_E * \frac{\dot{E}_h^{k=2}(35) - \dot{E}_h^{k=2}(17)}{35 - 17}\right]$$

where,

$$N_Q = \frac{\dot{Q}_h^{k=v}(35) - \dot{Q}_h^{k=1}(35)}{\dot{Q}_h^{k=2}(35) - \dot{Q}_h^{k=1}(35)} \qquad N_E = \frac{\dot{E}_h^{k=v}(35) - \dot{E}_h^{k=1}(35)}{\dot{E}_h^{k=2}(35) - \dot{E}_h^{k=1}(35)}$$

Use Equations 4.2.4-1 and 4.2.4-2, respectively, to calculate $\dot{Q}_h^{k=1}(35)$ and $\dot{E}_h^{k=1}(35)$.

The calculation of Equation 4.2-1 quantities $\frac{RH(T_j)}{N}$ and $\frac{e_h(T_j)}{N}$ differs depending upon whether the heat pump would operate at minimum speed (section 4.2.4.1), operate at an intermediate speed (section 4.2.4.2), or operate at maximum speed (section 4.2.4.3) in responding to the building load.

4.2.4.1 Steady-state space heating capacity when operating at minimum compressor speed is greater than or equal to the building heating load at temperature T_j, $\dot{Q}_h^{k=1}(T_j \geq BL(T_j)$. Evaluate the Equation 4.2–1 quantities

$$\frac{RH(T_j)}{N} \quad \text{and} \quad \frac{e_h(T_j)}{N}$$

as specified in section 4.2.3.1. Except now use Equations 4.2.4–1 and 4.2.4–2 to evaluate $\dot{Q}_h^{k=1}(T_j)$ and $\dot{E}_h^{k=1}(T_j)$, respectively, and replace section 4.2.3.1 references to "low capacity" and section 3.6.3 with "minimum speed" and section 3.6.4. Also, the last sentence of section 4.2.3.1 does not apply.

4.2.4.2 Heat pump operates at an intermediate compressor speed (k=i) in order to match the building heating load at a temperature T_j, $\dot{Q}_h^{k=1}(T_j) < BL(T_j) < \dot{Q}_h^{k=2}(T_j)$. Calculate

$\frac{RH(T_j)}{N}$ using Equation 4.2.3-2 while evaluating $\frac{e_h(T_j)}{N}$ using,

$$\frac{e_h(T_j)}{N} = \dot{E}_h^{k=1}(T_j) * \delta(T_j) * \frac{n_j}{N}$$

where,

$$\dot{E}_h^{k=1}(T_j) = \frac{\dot{Q}_h^{k=1}(T_j)}{3.413 \frac{Btu/h}{W} * COP^{k=1}(T_j)}$$

and $\delta(T_j)$ is evaluated using Equation 4.2.3–3 while,

$\dot{Q}_h^{k=i}(T_j) = BL(T_j)$, the space heating capacity delivered by the unit in matching the building load at temperature (T_j), Btu/h. The matching occurs with the heat pump operating at compressor speed k=i.

$COP^{k=i}(T_j)$ = the steady-state coefficient of performance of the heat pump when operating at compressor speed k=i and temperature T_j, dimensionless.

For each temperature bin where the heat pump operates at an intermediate compressor speed, determine $COP^{k=i}(T_j)$ using,

$COP^{k=i}(T_j) = A + B \cdot T_j + C \cdot T_j^2$.

For each heat pump, determine the coefficients A, B, and C by conducting the following calculations once:

$$D = \frac{T_3^2 - T_4^2}{T_{vh}^2 - T_4^2} \qquad B = \frac{COP^{k=2}(T_4) - COP^{k=1}(T_3) - D*[COP^{k=2}(T_4) - COP^{k=v}(T_{vh})]}{T_4 - T_3 - D*(T_4 - T_{vh})}$$

Where,=

T_3 = the outdoor temperature at which the heat pump, when operating at minimum compressor speed, provides a space heating capacity that is equal to the building load ($\dot{Q}_h^{k=1}(T_3) = BL(T_3)$), °F. Determine T_3 by equating Equations 4.2.4–1 and 4.2–2 and solving for:

$$C = \frac{COP^{k=2}(T_4) - COP^{k=2}(T_3) - B*(T_4 - T_3)}{T_4^2 - T_3^2} \qquad A = COP^{k=2}(T_4) - B * T_4 - C * T_4^2$$

outdoor temperature.

T_{vh} = the outdoor temperature at which the heat pump, when operating at the intermediate compressor speed used during the section 3.6.4 $H2_V$ Test, provides a space heating capacity that is equal to the building load ($\dot{Q}_h^{k=v}(T_{vh}) = BL(T_{vh})$), °F. Determine T_{vh} by equating Equations 4.2.4–3 and 4.2–2 and solving for outdoor temperature.

T_4 = the outdoor temperature at which the heat pump, when operating at maximum compressor speed, provides a space heating capacity that is equal to the building load ($\dot{Q}_h^{k=2}(T_4) = BL(T_4)$), °F. Determine T_4 by equating Equations 4.2.2–3 (k=2) and 4.2–2 and solving for outdoor temperature.

$$COP^{k=1}(T_3) = \frac{\dot{Q}_h^{k=1}(T_3)[Eqn. 4.2.4-1, substituting\ T_3\ for\ T_j]}{3.413 \frac{Btu/h}{W} * \dot{E}_h^{k=1}(T_3)[Eqn. 4.2.4-2, substituting\ T_3\ for\ T_j]}$$

$$COP^{k=v}(T_{vh}) = \frac{\dot{Q}_h^{k=v}(T_{vh})[Eqn. 4.2.4-3, substituting\ T_{vh}\ for\ T_j]}{3.413 \frac{Btu/h}{W} * \dot{E}_h^{k=v}(T_{vh})[Eqn. 4.2.4-4, substituting\ T_{vh}\ for\ T_j]}$$

$$COP^{k=2}(T_4) = \frac{\dot{Q}_h^{k=2}(T_4)[Eqn. 4.2.2-3, substituting\ T_4\ for\ T_j]}{3.413 \frac{Btu/h}{W} * \dot{E}_h^{k=2}(T_4)[Eqn. 4.2.2-4, substituting\ T_4\ for\ T_j]}$$

For multiple-split heat pumps (only), the following procedures supersede the above requirements for calculating $COP_h^{k=i}(T_j)$. For each temperature bin where $T_3 > T_j > T_{vh}$,

$$COP_h^{k=1}(T_j) = COP_h^{k=1}(T_3) + \frac{COP_h^{k=v}(T_{vh}) - COP_h^{k=1}(T_3)}{T_{vh} - T_3} * (T_j - T_3)$$

For each temperature bin where $T_{vh} \geq T_j > T_4$,

$$COP_h^{k=1}(T_j) = COP_h^{k=v}(T_{vh}) + \frac{COP_h^{k=2}(T_4) - COP_h^{k=v}(T_{vh})}{T_4 - T_{vh}} * (T_j - T_{vh})$$

4.2.4.3 Heat pump must operate continuously at maximum (k=2) compressor speed at temperature T_j, $BL(T_j) \geq \dot{Q}_h^{k=2}(T_j)$. Evaluate the Equation 4.2–1 quantities

$$\frac{RH(T_j)}{N} \quad \text{and} \quad \frac{e_h(T_j)}{N}$$

as specified in section 4.2.3.4 with the understanding that $\dot{Q}_h^{k=2}(T_j)$ and $\dot{E}_h^{k=2}(T_j)$ correspond to maximum compressor speed operation and are derived from the results of the specified section 3.6.4 tests.

4.2.5 Heat pumps having a heat comfort controller. Heat pumps having heat comfort controllers, when set to maintain a typical minimum air delivery temperature, will cause the heat pump condenser to operate less because of a greater contribution from the resistive elements. With a conventional heat pump, resistive heating is only initiated if the heat pump condenser cannot meet the building load (*i.e.,* is delayed until a second stage call from the indoor thermostat). With a heat comfort controller, resistive heating can occur even though the heat pump condenser has adequate capacity to meet the building load (*i.e.,* both on during a first stage call from the indoor thermostat). As a result, the outdoor temperature where the heat pump compressor no longer cycles (*i.e.,* starts to run continuously), will be lower than if the heat pump did not have the heat comfort controller.

4.2.5.1 Heat pump having a heat comfort controller: additional steps for calculating the HSPF of a heat pump having a single-speed compressor that was tested with a fixed-speed indoor blower installed, a constant-air-volume-rate indoor blower installed, or with no indoor blower installed. Calculate the space heating capacity and electrical power of the heat pump without the heat comfort controller being active as specified in section 4.2.1 (Equations 4.2.1–4 and 4.2.1–5) for each outdoor bin temperature, T_j, that is listed in Table 19. Denote these capacities and electrical powers by using the subscript ''hp'' instead of ''h.'' Calculate the mass flow rate (expressed in pounds-mass of dry air per hour) and the specific heat of the indoor air (expressed in $Btu/lbm_{da} \cdot °F$) from the results of the H1 Test using:

$$\dot{m}_{da} = \overline{\dot{V}_s} * 0.075 \frac{lbm_{da}}{ft^3} * \frac{60_{min}}{hr} = \frac{\overline{\dot{V}}_{mx}}{v_n' * [1 + W_n]} * \frac{60_{min}}{hr} = \frac{\overline{\dot{V}}_{mx}}{v_n} * \frac{60_{min}}{hr}$$

where $\overline{\dot{V}}_s$, $\overline{\dot{V}}_{mx}$, v'_n (or v_n), and W_n are defined following Equation 3–1. For each outdoor bin temperature listed in Table 19, calculate the nominal temperature of the air leaving the heat pump condenser coil using,

$$T_0(T_j) = 70°F + \frac{\dot{Q}_{hp}(T_j)}{\dot{m}_{da} * C_{p,da}}$$

Evaluate $e_h(T_j/N)$, $RH(T_j)/N$, $X(T_j)$, PLF_j, and $\delta(T_j)$ as specified in section 4.2.1. For each bin calculation, use the space heating capacity and electrical power from Case 1 or Case 2, whichever applies.

Case 1. For outdoor bin temperatures where $T_o(T_j)$ is equal to or greater than T_{CC} (the maximum supply temperature determined according to section 3.1.9), determine $\dot{Q}_h(T_j)$ and $\dot{E}_h(T_j)$ as specified in section 4.2.1 (*i.e.,* $\dot{Q}_h(T_j) = \dot{Q}_{hp}(T_j)$ and $\dot{E}_{hp}(T_j) = \dot{E}_{hp}(T_j)$). Note: Even though $T_o(T_j) \geq T_{cc}$, resistive heating may be required; evaluate Equation 4.2.1–2 for all bins.

Case 2. For outdoor bin temperatures where $T_o(T_j) > T_{cc}$, determine $\dot{Q}_h(T_j)$ and $\dot{E}_h(T_j)$ using,

$\dot{Q}_h(T_j) = \dot{Q}_{hp}(T_j) + \dot{Q}_{CC}(T_j)$

$\dot{E}_h(T_j) = \dot{E}_{hp}(T_j) + \dot{E}_{CC}(T_j)$

Where,

$$\dot{Q}_{CC}(T_j) = \dot{m}_{da} * C_{p,da} * [T_{CC} - T_0(T_j)] \qquad \dot{E}_{CC}(T_j) = \frac{\dot{Q}_{CC}(T_j)}{3.413 \frac{Btu/h}{W}}$$

Note: Even though $T_o(T_j) < T_{cc}$, additional resistive heating may be required; evaluate Equation 4.2.1–2 for all bins.

4.2.5.2 Heat pump having a heat comfort controller: additional steps for calculating the HSPF of a heat pump having a single-speed compressor and a variable-speed, variable-air-volume-rate indoor blower. Calculate the space heating capacity and electrical power of the heat pump without the heat comfort controller being active as specified in section 4.2.2 (Equations 4.2.2–1 and 4.2.2–2) for each outdoor bin temperature, T_j, that is listed in Table 19. Denote these capacities and electrical powers by using the subscript ''hp'' instead of ''h.'' Calculate the mass flow rate (expressed in pounds-mass of dry air per hour) and the specific heat of the indoor air (expressed in Btu/lbm$_{da}$ · °F) from the results of the $H1_2$ Test using:

$$\dot{m}_{da} = \overline{\dot{V}_s} * 0.075 \frac{lbm_{da}}{ft^3} * \frac{60_{min}}{hr} = \frac{\overline{\dot{V}}_{mx}}{v_n' * [1 + W_n]} * \frac{60_{min}}{hr} = \frac{\overline{\dot{V}}_{mx}}{v_n} * \frac{60_{min}}{hr}$$

$$C_{p,da} = 0.24 + 0.444 * W_n$$

Where $\overline{\dot{V}}_s$, $\overline{\dot{V}}_{mx}$, v'_n (or v_n), and W_n are defined following Equation 3–1. For each outdoor bin temperature listed in Table 19, calculate the nominal temperature of the air leaving the heat pump condenser coil using,

$$T_0(T_j) = 70°\text{F} + \frac{\dot{Q}_{hp}(T_j)}{\dot{m}_{da} * C_{p,da}}$$

Evaluate $e_h(T_j)/N$, $RH(T_j)/N$, $X(T_j)$, PLF_j, and $\delta(T_j)$ as specified in section 4.2.1 with the exception of replacing references to the H1C Test and section 3.6.1 with the $H1C_1$ Test and section 3.6.2. For each bin calculation, use the space heating capacity and electrical power from Case 1 or Case 2, whichever applies.

Case 1. For outdoor bin temperatures where $T_o(T_j)$ is equal to or greater than T_{CC} (the maximum supply temperature determined according to section 3.1.9), determine $\dot{Q}_h(T_j)$ and $\dot{E}_h(T_j)$ as specified in section 4.2.2 (*i.e.* $\dot{Q}_h(T_j) = \dot{Q}_{hp}(T_j)$ and $\dot{E}_h(T_j) = \dot{E}_{hp}(T_j)$). Note: Even though $T_o(T_j) \geq T_{CC}$, resistive heating may be required; evaluate Equation 4.2.1–2 for all bins.

Case 2. For outdoor bin temperatures where $T_o(T_j) < T_{CC}$, determine $\dot{Q}_h(T_j)$ and $\dot{E}_h(T_j)$ using,

$\dot{Q}_h(T_j) = \dot{Q}_{hp}(T_j) + \dot{Q}_{CC}(T_j)$ $\dot{E}_h(T_j) = \dot{E}_{hp}(T_j) + \dot{E}_{CC}(T_j)$

Where,

$$\dot{Q}_{CC}(T_j) = \dot{m}_{da} * C_{p,da} * [T_{CC} - T_0(T_j)] \qquad \dot{E}_{CC}(T_j) = \frac{\dot{Q}_{CC}(T_j)}{3.413 \frac{Btu/h}{W}}$$

Note: Even though $T_o(T_j) < T_{cc}$, additional resistive heating may be required; evaluate Equation 4.2.1–2 for all bins.

4.2.5.3 Heat pumps having a heat comfort controller: additional steps for calculating the HSPF of a heat pump having a two-capacity compressor. Calculate the space heating capacity and electrical power of the heat pump without the heat comfort controller being active as specified in section 4.2.3 for both high and low capacity and at each outdoor bin temperature, T_j, that is listed in Table 19. Denote these capacities and electrical powers by using the subscript ''hp'' instead of ''h.'' For the low capacity case, calculate the mass flow rate (expressed in pounds-mass of dry air per hour) and the specific heat of the indoor air (expressed in Btu/lbm$_{da}$ · °F) from the results of the $H1_1$ Test using:

$$\dot{m}_{da}^{k=1} = \overline{\dot{V}_s} * 0.075 \frac{lbm_{da}}{ft^3} * \frac{60_{min}}{hr} = \frac{\overline{\dot{V}}_{mx}}{v_n' * [1 + W_n]} * \frac{60_{min}}{hr} = \frac{\overline{\dot{V}}_{mx}}{v_n} * \frac{60_{min}}{hr}$$

$$C_{p,da}^{k=1} = 0.24 + 0.444 * W_n$$

$C_{p,da} = 0.24 + 0.444 * W_n$

Where

$\dot{V}_s$, $\dot{V}_{mx}$, v'_n (or v_n), and W_n are defined following Equation 3–1. For each outdoor bin temperature listed in Table 19, calculate the nominal temperature of the air leaving the heat pump condenser coil when operating at low capacity using,

$$T_0^{k=1}(T_j) = 70°\text{F} + \frac{\dot{Q}_{hp}^{k=1}(T_j)}{\dot{m}_{da}^{k=1} * C_{p,da}^{k=1}}$$

Repeat the above calculations to determine the mass flow rate ($\dot{m}_{da}^{k=2}$) and the specific heat of the indoor air ($C_{p,da}^{k=2}$) when operating at high capacity by using the results of the $H1_2$ Test. For each outdoor bin temperature listed in Table 19, calculate the nominal temperature of the air leaving the heat pump condenser coil when operating at high capacity using,

$$T_0^{k=2}(T_j) = 70°F + \frac{\dot{Q}_{hp}^{k=2}(T_j)}{\dot{m}_{da}^{k=2} * C_{p,da}^{k=2}}$$

Evaluate $e_h(T_j)/N$, $RH(T_j)/N$, $X^{k=1}(T_j)$, and/or $X^{k=2}(T_j)$, PLF_j, and $\delta'(T_j)$ or $\delta''(T_j)$ as specified in section 4.2.3.1. 4.2.3.2, 4.2.3.3, or 4.2.3.4, whichever applies, for each temperature bin. To evaluate these quantities, use the low-capacity space heating capacity and the low-capacity electrical power from Case 1 or Case 2, whichever applies; use the high-capacity space heating capacity and the high-capacity electrical power from Case 3 or Case 4, whichever applies.

Case 1. For outdoor bin temperatures where $T_o^{k=1}(T_j)$ is equal to or greater than T_{CC} (the maximum supply temperature determined according to section 3.1.9), determine $\dot{Q}_h^{k=1}(T_j)$ and $\dot{E}_h^{k=1}(T_j)$ as specified in section 4.2.3 (*i.e.,* $\dot{Q}_h^{k=1}(T_j) = \dot{Q}_{hp}^{k=1}(T_j)$ and $\dot{E}_h^{k=1}(T_j) = \dot{E}_{hp}^{k=1}(T_j)$).

Note: Even though $T_o^{k=1}(T_j) \geq T_{CC}$, resistive heating may be required; evaluate $RH(T_j)/N$ for all bins.

Case 2. For outdoor bin temperatures where $T_o^{k=1}(T_j) < T_{CC}$, determine $\dot{Q}_h^{k=1}(T_j)$ and $\dot{E}_h^{k=1}(T_j)$ using,

$$\dot{Q}_h^{k=1}(T_j) = \dot{Q}_{hp}^{k=1}(T_j) + \dot{Q}_{CC}^{k=1}(T_j) \qquad \dot{E}_h^{k=1}(T_j) = \dot{E}_{hp}^{k=1}(T_j) + \dot{E}_{CC}^{k=1}(T_j)$$

where,

$$\dot{Q}_{CC}^{k=1}(T_j) = \dot{m}_{da}^{k=1} * C_{p,da}^{k=1} * [T_{CC} - T_0^{k=1}(T_j)] \qquad \dot{E}_{CC}^{k=1}(T_j) = \frac{\dot{Q}_{CC}^{k=1}(T_j)}{3.413\frac{Btu/h}{W}}$$

Note: Even though $T_o^{k=1}(T_j) \geq T_{cc}$, additional resistive heating may be required; evaluate $RH(T_j)/N$ for all bins.

Case 3. For outdoor bin temperatures where $T_o^{k=2}(T_j)$ is equal to or greater than T_{CC}, determine $\dot{Q}_h^{k=2}(T_j)$ and $\dot{E}_h^{k=2}(T_j)$ as specified in section 4.2.3 (*i.e.,* $\dot{Q}_h^{k=2}(T_j) = \dot{Q}_{hp}^{k=2}(T_j)$ and $\dot{E}_h^{k=2}(T_j) = \dot{E}_{hp}^{k=2}(T_j)$).

Note: Even though $T_o^{k=2}(T_j) < T_{CC}$, resistive heating may be required; evaluate $RH(T_j)/N$ for all bins.

Case 4. For outdoor bin temperatures where $T_o^{k=2}(T_j) < T_{CC}$, determine $\dot{Q}_h^{k=2}(T_j)$ and $\dot{E}_h^{k=2}(T_j)$ using,

$$\dot{Q}_h^{k=2}(T_j) = \dot{Q}_{hp}^{k=2}(T_j) + \dot{Q}_{CC}^{k=2}(T_j) \qquad \dot{E}_h^{k=2}(T_j) = \dot{E}_{hp}^{k=2}(T_j) + \dot{E}_{CC}^{k=2}(T_j)$$

where,

$$\dot{Q}_{CC}^{k=2}(T_j) = \dot{m}_{da}^{k=2} * C_{p,da}^{k=2} * [T_{CC} - T_0^{k=2}(T_j)] \qquad \dot{E}_{CC}^{k=2}(T_j) = \frac{\dot{Q}_{CC}^{k=2}(T_j)}{3.413\frac{Btu/h}{W}}$$

Note: Even though $T_o^{k=2}(T_j) < T_{cc}$, additional resistive heating may be required; evaluate $RH(T_j)/N$ for all bins.

4.2.5.4 Heat pumps having a heat comfort controller: additional steps for calculating the HSPF of a heat pump having a variable-speed compressor. [Reserved]

4.2.6 Additional steps for calculating the HSPF of a heat pump having a triple-capacity compressor. The only triple-capacity heat pumps covered are triple-capacity, northern heat pumps.

For such heat pumps, the calculation of the Eq. 4.2–1 quantities

$$\frac{RH(T_j)}{N} \quad \text{and} \quad \frac{e_h(T_j)}{N}$$

differ depending on whether the heat pump would cycle on and off at low capacity (section 4.2.6.1), cycle on and off at high capacity (section 4.2.6.2), cycle on and off at booster capacity (4.2.6.3), cycle between low and high capacity (section 4.2.6.4), cycle between high and booster capacity (section 4.2.6.5), operate continuously at low capacity (4.2.6.6), operate continuously at high capacity (section 4.2.6.7), operate continuously at booster capacity (4.2.6.8), or heat solely using resistive heating (also section 4.2.6.8) in responding to the building load. As applicable, the manufacturer must supply information regarding the outdoor temperature range at which each stage of compressor capacity is active. As an informative example, data may be submitted in this manner: At the low (k=1) compressor capacity, the outdoor temperature range of operation is 40 °F ≤ T ≤ 65 °F; At the high (k=2) compressor capacity, the outdoor temperature range of operation is 20 °F ≤ T ≤ 50 °F; At the booster (k=3) compressor capacity, the outdoor temperature range of operation is −20 °F ≤ T ≤ 30 °F.

a. Evaluate the space heating capacity and electrical power consumption of the heat pump when operating at low compressor capacity and outdoor temperature Tj using the equations given in section 4.2.3 for $\dot{Q}_h^{k=1}(T_j)$ and $\dot{E}_h^{k=1}(T_j)$) In evaluating the section 4.2.3 equations, Determine $\dot{Q}_h^{k=1}(62)$ and $\dot{E}_h^{k=1}(62)$ from the $H0_1$ Test, $\dot{Q}_h^{k=1}(47)$ and $\dot{E}_h^{k=1}(47)$ from the $H1_1$ Test, and $\dot{Q}_h^{k=2}(47)$ and $\dot{E}_h^{k=2}(47)$ from the $H1_2$ Test. Calculate all four quantities as specified in section 3.7. If, in accordance with section 3.6.6, the $H3_1$ Test is conducted, calculate $\dot{Q}_h^{k=1}(17)$ and $\dot{E}_h^{k=1}(17)$ as specified in section 3.10 and determine $\dot{Q}_h^{k=1}(35)$ and $\dot{E}_h^{k=1}(35)$ as specified in section 3.6.6.

b. Evaluate the space heating capacity and electrical power consumption ($\dot{Q}_h^{k=2}(T_j)$ and $\dot{E}_h^{k=2}(T_j)$) of the heat pump when operating at high compressor capacity and outdoor temperature Tj by solving Equations 4.2.2–3 and 4.2.2–4, respectively, for k=2. Determine $\dot{Q}_h^{k=1}(62)$ and $\dot{E}_h^{k=1}(62)$ from the $H0_1$ Test, $\dot{Q}_h^{k=1}(47)$ and $\dot{E}_h^{k=1}(47)$ from the $H1_1$ Test, and $\dot{Q}_h^{k=2}(47)$ and $\dot{E}_h^{k=2}(47)$ from the $H1_2$ Test, evaluated as specified in section 3.7. Determine the equation input for $\dot{Q}_h^{k=2}(35)$ and $\dot{E}_h^{k=2}(35)$ from the $H2_2$, evaluated as specified in section 3.9.1. Also, determine $\dot{Q}_h^{k=2}(17)$ and $\dot{E}_h^{k=2}(17)$ from the $H3_2$ Test, evaluated as specified in section 3.10.

c. Evaluate the space heating capacity and electrical power consumption of the heat pump when operating at booster compressor capacity and outdoor temperature Tj using

$$\dot{Q}_h^{k=3}(T_j) = \begin{cases} \dot{Q}_h^{k=3}(17) + \dfrac{\left[\dot{Q}_h^{k=3}(35) - \dot{Q}_h^{k=3}(17)\right] * (T_j - 17)}{35 - 17}, & if\ 17\ °\mathrm{F} < T_j \leq 45\ °\mathrm{F} \\ \dot{Q}_h^{k=3}(2) + \dfrac{\left[\dot{Q}_h^{k=3}(17) - \dot{Q}_h^{k=3}(2)\right] * (T_j - 2)}{17 - 2}, & if\ T_j \leq 17\ °\mathrm{F} \end{cases}$$

$$\dot{E}_h^{k=3}(T_j) = \begin{cases} \dot{E}_h^{k=3}(17) + \dfrac{\left[\dot{E}_h^{k=3}(35) - \dot{E}_h^{k=3}(17)\right] * (T_j - 17)}{35 - 17}, & if\ 17\ °\mathrm{F} < T_j \leq 45\ °\mathrm{F} \\ \dot{E}_h^{k=3}(2) + \dfrac{\left[\dot{E}_h^{k=3}(17) - \dot{E}_h^{k=3}(2)\right] * (T_j - 2)}{17 - 2}, & if\ T_j \leq 17\ °\mathrm{F} \end{cases}$$

Determine $\dot{Q}_h^{k=3}(17)$ and $\dot{E}_h^{k=3}(17)$ from the $H3_3$ Test and determine $\dot{Q}_h^{k=2}(2)$ and $\dot{E}_h^{k=3}(2)$ from the $H4_3$ Test. Calculate all four quantities as specified in section 3.10. Determine the equation input for $\dot{Q}_h^{k=3}(35)$ and $\dot{E}_h^{k=3}(35)$ as specified in section 3.6.6.

4.2.6.1 Steady-state space heating capacity when operating at low compressor capacity is greater than or equal to the building heating load at temperature T_j, $\dot{Q}_h^{k=1}(T_j) \geq BL(T_j)$., and the heat pump permits low compressor capacity at T_j. Evaluate the quantities

$$\frac{RH(T_j)}{N} \quad \text{and} \quad \frac{e_h(T_j)}{N}$$

using Eqs. 4.2.3–1 and 4.2.3–2, respectively. Determine the equation inputs $X^{k=1}(T_j)$, PLF_j, and $\delta'(T_j)$ as specified in section 4.2.3.1. In calculating the part load factor, PLF_j, use the low-capacity cyclic-degradation coefficient $C_D{}^h$, [or equivalently, $C_D{}^h(k=1)$] determined in accordance with section 3.6.6.

4.2.6.2 Heat pump only operates at high (k=2) compressor capacity at temperature T_j and its capacity is greater than or equal to the building heating load, $BL(T_j) < \dot{Q}_h^{k=2}(T_j)$. Evaluate the quantities

$$\frac{RH(T_j)}{N} \quad \text{and} \quad \frac{e_h(T_j)}{N}$$

as specified in section 4.2.3.3. Determine the equation inputs $X^{k=2}(T_j)$, PLF_j, and $\delta'(T_j)$ as specified in section 4.2.3.3. In calculating the part load factor, PLF_j, use the high-capacity cyclic-degradation coefficient, $C_D{}^h(k=2)$ determined in accordance with section 3.6.6.

4.2.6.3 Heat pump only operates at high (k=3) compressor capacity at temperature T_j and its capacity is greater than or equal to the building heating load, $BL(T_j) \leq \dot{Q}_h^{k=3}(T_j)$.

Calculate $\frac{RH(T_j)}{N}$ and using Eq. 4.2.3-2. Evaluate $\frac{e_h(T_j)}{N}$ using

$$\frac{e_h(T_j)}{N} = \frac{X^{k=3}(T_j) * \dot{E}_h^{k=3}(T_j) * \delta'(T_j)}{PLF_j} * \frac{n_j}{N}$$

Determine the low temperature cut-out factor, $\delta'(T_j)$, using Eq. 4.2.3–3. Use the booster-capacity cyclic-degradation coefficient, $C_D{}^h(k=3)$ determined in accordance with section 3.6.6.

4.2.6.4 Heat pump alternates between high (k=2) and low (k=1) compressor capacity to satisfy the building heating load at a temperature T_j, $\dot{Q}_h^{k=1}(T_j) < BL(T_j) < \dot{Q}_h^{k=2}(T_j)$. Evaluate the quantities

$$\frac{RH(T_j)}{N} \quad \text{and} \quad \frac{e_h(T_j)}{N}$$

as specified in section 4.2.3.2. Determine the equation inputs $X^{k=1}(T_j)$, $X^{k=2}(T_j)$, and $\delta'(T_j)$ as specified in section 4.2.3.2.

4.2.6.5 Heat pump alternates between high (k=2) and booster (k=3) compressor capacity to satisfy the building heating load at a temperature T_j, $\dot{Q}_h^{k=2}(T_j) < BL(T_j) < \dot{Q}_h^{k=3}(T_j)$.

Calculate $\frac{RH(T_j)}{N}$ and using Eq. 4.2.3-2. Evaluate $\frac{e_h(T_j)}{N}$ using

$$\frac{e_h(T_j)}{N} = [X^{k=2}(T_j) * \dot{E}_h^{k=2}(T_j) + X^{k=3}(T_j) * \dot{E}_h^{k=3}(T_j)] * \delta'(T_j) * \frac{n_j}{N}$$

where:

$$X^{k=2}(T_j) = \frac{\dot{Q}_h^{k=3}(T_j) - BL(T_j)}{\dot{Q}_h^{k=3}(T_j) - \dot{Q}_h^{k=2}(T_j)}$$

and $X^{k=3}(T_j) = X^{k=2}(T_j)$ = the heating mode, booster capacity load factor for temperature bin j, dimensionless. Determine the low temperature cut-out factor, $\delta'(T_j)$, using Eq. 4.2.3–3.

4.2.6.6 Heat pump only operates at low (k=1) capacity at temperature T_j and its capacity is less than the building heating load, $BL(T_j) > \dot{Q}_h^{k=1}(T_j)$.

$$\frac{e_h(T_j)}{N} = \dot{E}_h^{k=1}(T_j) * \delta'(T_j) * \frac{n_j}{N} \quad \text{and} \frac{RH(T_j)}{N} = \frac{BL(T_j) - [\dot{Q}_h^{k=1}(T_j) * \delta\prime(T_j)]}{3.413\frac{Btu/h}{W}} * \frac{n_j}{N}$$

Where the low temperature cut-out factor, $\delta'(Tj)$, is calculated using Eq. 4.2.3–3.

4.2.6.7 Heat pump only operates at high (k = 2) capacity at temperature Tj and its capacity is less than the building heating load, $BL(Tj) > \dot{Q}_h^{k=2}(T_j)$.Evaluate the quantities

$$\frac{RH(T_j)}{N} \quad \text{and} \quad \frac{e_h(T_j)}{N}$$

as specified in section 4.2.3.4. Calculate $\delta''(Tj)$ using the equation given in section 4.2.3.4.

4.2.6.8 Heat pump only operates at booster (k = 3) capacity at temperature Tj and its capacity is less than the building heating load, $BL(T_j) > \dot{Q}_h^{k=3}(T_j)$. or the system converts to using only resistive heating.

$$\frac{e_h(T_j)}{N} = \dot{E}_h^{k=3}(T_j) * \delta'(T_j) * \frac{n_j}{N} \quad \text{and} \frac{RH(T_j)}{N} = \frac{BL(T_j) - [\dot{Q}_h^{k=3}(T_j) * \delta\prime(T_j)]}{3.413\frac{Btu/h}{W}} * \frac{n_j}{N}$$

Where $\delta''(Tj)$ is calculated as specified in section 4.2.3.4 if the heat pump is operating at its booster compressor capacity. If the heat pump system converts to using only resistive heating at outdoor temperature T_j, set $\delta'(T_j)$ equal to zero.

4.2.7 Additional steps for calculating the HSPF of a heat pump having a single indoor unit with multiple blowers. The calculation of the Eq. 4.2–1 quantities $e_h(T_j)/N$ and $RH(T_j)/N$ are evaluated as specified in applicable below subsection.

4.2.7.1 For multiple blower heat pumps that are connected to a singular, single-speed outdoor unit.

a. Calculate the space heating capacity, $\dot{Q}_h^{k=1}(Tj)$, and electrical power consumption, $\dot{E}_h^{k=1}(Tj)$, of the heat pump when operating at the heating minimum air volume rate and outdoor temperature T_j using Eqs. 4.2.2–3 and 4.2.2–4, respectively. Use these same equations to calculate the space heating capacity, $\dot{Q}_h^{k=2}(Tj)$ and electrical power consumption, $\dot{E}_h^{k=2}(Tj)$, of the test unit when operating at the heating full-load air volume rate and outdoor temperature T_j. In evaluating Eqs. 4.2.2–3 and 4.2.2– 4, determine the quantities $\dot{Q}_h^{k=1}(47)$ and $\dot{E}_h^{k=1}(47)$ from the $H1_1$ Test; determine $\dot{Q}_h^{k=2}(47)$ and $\dot{E}_h^{k=2}(47)$ from the $H1_2$ Test. Evaluate all four quantities according to section 3.7. Determine the quantities $\dot{Q}_h^{k=1}(35)$ and $\dot{E}_h^{k=1}(35)$ as specified in section 3.6.2. Determine $\dot{Q}_h^{k=2}(35)$ and $\dot{E}_h^{k=2}(35)$ from the $H2_2$ Frost Accumulation Test as calculated according to section 3.9.1. Determine the quantities $\dot{Q}_h^{k=1}(17)$ and $\dot{E}_h^{k=1}(17)$ from the $H3_1$ Test, and $\dot{Q}_h^{k=2}(17)$ and $\dot{E}_h^{k=2}(17)$ from the $H3_2$ Test. Evaluate all four quantities according to section 3.10. Refer to section 3.6.2 and Table 11 for additional information on the referenced laboratory tests.

b. Determine the heating mode cyclic degradation coefficient, CD_h, as per sections 3.6.2 and 3.8 to 3.8.1. Assign this same value to $CD_h(k = 2)$.

c. Except for using the above values of $\dot{Q}_h^{k=1}(Tj)$, $\dot{E}_h^{k=1}(Tj)$, $\dot{Q}_h^{k=2}(Tj)$, $\dot{E}_h^{k=2}(Tj)$, CD_h, and $CD_h(k = 2)$, calculate the quantities $e_h(T_j)/N$ as specified in section 4.2.3.1 for cases where $\dot{Q}_h^{k=1}(Tj) \geq BL(T_j)$. For all other outdoor bin temperatures, T_j, calculate $e_h(Tj)/N$ and $RH_h(Tj)/N$ as specified in section 4.2.3.3 if $\dot{Q}_h^{k=2}(Tj) > BL(Tj)$ or as specified in section 4.2.3.4 if $\dot{Q}_h^{k=2}(Tj) \leq BL(T_j)$

4.2.7.2 For multiple blower heat pumps connected to either a lone outdoor unit with a two-capacity compressor or to two separate but identical model single-speed outdoor units. Calculate the quantities $e_h(T_j)/N$ and $RH(T_j)/N$ as specified in section 4.2.3.

4.3 Calculations of Off-mode Seasonal Power and Energy Consumption.

4.3.1 For central air conditioners and heat pumps with a cooling capacity of:

less than 36,000 Btu/h, determine the off mode rating, $P_{W,OFF}$, with the following equation:

$$P_{W,OFF} = \begin{cases} P1 & if\ P2 = 0 \\ \frac{P1+P2}{2} & otherwise \end{cases};$$

greater than or equal to 36,000 Btu/h, calculate the capacity scaling factor according to:

$$F_{scale} = \frac{\dot{Q}_C(95)}{36{,}000},$$

Where, $\dot{Q}_C(95)$ is the total cooling capacity at the A or A_2 Test condition, and determine

the off mode rating, $P_{W,OFF}$, with the following equation: $P_{W,OFF} = \begin{cases} \frac{P1}{F_{scale}} & if\ P2 = 0 \\ \frac{(P1+P2)/2}{F_{scale}} & otherwise \end{cases};$

4.3.2 Calculate the off mode energy consumption for both central air conditioner and heat pumps for the shoulder season, *E1,* using: $E1 = P1 \cdot SSH$; and the off mode energy consumption of a CAC, only, for the heating season, *E2,* using: $E2 = P2 \cdot HSH$; where *P1* and *P2* is determined in Section 3.13. *HSH* can be determined by multiplying the heating season-hours from Table 21 with the fractional Bin-hours, from Table 19, that pertain to the range of temperatures at which the crankcase heater operates. If the crankcase heater is controlled to disable for the heating season, the temperature range at which the crankcase heater operates is defined to be from 72 °F to five degrees Fahrenheit below a turn-off temperature specified by the manufacturer in the DOE Compliance Certification Database. If the crankcase heater is operated during the heating season, the temperature range at which the crankcase heater operates is defined to be from 72 °F to −23 °F, the latter of which is a temperature that sets the range of Bin-hours to encompass all outside air temperatures in the heating season.

SSH can be determined by multiplying the shoulder season-hours from Table 21 with the fractional Bin-hours in Table 22.

TABLE 21—REPRESENTATIVE COOLING AND HEATING LOAD HOURS AND THE CORRESPONDING SET OF SEASONAL HOURS FOR EACH GENERALIZED CLIMATIC REGION

Climatic region	Cooling load hours CLH_R	Heating load hours HLH_R	Cooling season hours CSH_R	Heating season hours HSH_R	Shoulder season hours SSH_R
I	2400	750	6731	1826	203
II	1800	1250	5048	3148	564
III	1200	1750	3365	4453	942
IV	800	2250	2244	5643	873
Rating Values	1000	2080	2805	5216	739
V	400	2750	1122	6956	682
VI	200	2750	561	6258	1941

HSH is evaluated as: $HSH = \frac{HLH \cdot (65 - T_{OD})}{\sum_{j=1}^{J}(65 - T_j) \cdot \frac{n_j}{N}},$

where T_{OD} and $\frac{n_j}{N}$ are listed in Table 18 and depend on the location of interest relative to Figure 1. For the six generalized climatic regions, this equation simplifies to the following set of equations:

Region I: $HSH = 2.4348HLH$;

Region II: $HSH = 2.5182HLH$;

Region III: $HSH = 2.5444HLH$;

Region IV: $HSH = 2.5078HLH$;
Region V: $HSH = 2.5295HLH$;
Region VI: $HSH = 2.2757HLH$.

SSH is evaluated: $SSH = 8760 - (CSH + HSH)$, where *CSH* = the cooling season hours calculated using $CSH = 2.8045 \cdot CLH$

TABLE 22—FRACTIONAL BIN HOURS FOR THE SHOULDER SEASON HOURS FOR ALL REGIONS

Tj(°F)	Fractional bin hours	
	Air conditioners	Heat pumps
72	0.333	0.167
67	0.667	0.333
62	0	0.333
57	0	0.167

4.3.3 If a shoulder season crankcase heater time delay and/or a heating season crankcase heater time delay is specified by the manufacturer, multiply E1 and/or E2, by $\left(1 - \frac{t_{delay,i}}{60}\right)$, where $t_{delay,1}$ is the time delay for operation during the shoulder season and $t_{delay,2}$ is the time delay for operation during the heating season, in minutes. If a time delay is not specified, $t_{delay,i}$ is 15 minutes.

4.3.4 For air conditioners, the annual off mode energy consumption, E_{TOTAL}, is: $E_{TOTAL} = E1 + E2$.

4.3.5 For heat pumps, the annual off mode energy consumption, E_{TOTAL}, is *E1*.

4.4 Calculations of the Actual and Representative Regional Annual Performance Factors for Heat Pumps.

4.4.1 Calculation of actual regional annual performance factors (APF_A) for a particular location and for each standardized design heating requirement.

$$APF_A = \frac{CLH_A \cdot \dot{Q}_c^k(95) + HLH_A \cdot DHR \cdot C}{\frac{CLH_A \cdot \dot{Q}_c^k(95)}{SEER} + \frac{HLH_A \cdot DHR \cdot C}{HSPF} + P1 \cdot SSH + P2 \cdot HSH},$$

Where,

CLH_A = the actual cooling hours for a particular location as determined using the map given in Figure 2, hr.

$\dot{Q}_c^k(95)$ = the space cooling capacity of the unit as determined from the A or A_2 Test, whichever applies, Btu/h.

HLH_A = the actual heating hours for a particular location as determined using the map given in Figure 1, hr.

DHR = the design heating requirement used in determining the HSPF; refer to section 4.2 and see section 1.2, Definitions, Btu/h.

C = defined in section 4.2 following Equation 4.2–2, dimensionless.

SEER = the seasonal energy efficiency ratio calculated as specified in section 4.1, Btu/W·h.

HSPF = the heating seasonal performance factor calculated as specified in section 4.2 for the generalized climatic region that includes the particular location of interest (see Figure 1), Btu/W·h. The HSPF should correspond to the actual design heating requirement (DHR), if known. If it does not, it may correspond to one of the standardized design heating requirements referenced in section 4.2.

P1 is the shoulder season per-compressor off mode power, as determined in section 3.13, W.

SSH is the shoulder season hours, hr.

P2 is the heating season per-compressor off mode power, as determined in section 3.13, W.

HSH is the heating season hours, hr.

4.4.2 Calculation of representative regional annual performance factors (APF_R) for each generalized climatic region and for each standardized design heating requirement.

$$APF_R = \frac{CLH_R \cdot \dot{Q}_c^k(95) + HLH_R \cdot DHR \cdot C}{\frac{CLH_R \cdot \dot{Q}_c^k(95)}{SEER} + \frac{HLH_R \cdot DHR \cdot C}{HSPF} + P1 \cdot SSH + P2 \cdot HSH},$$

Where,

CLH_R = the representative cooling hours for each generalized climatic region, Table 23, hr.

HLH_R = the representative heating hours for each generalized climatic region, Table 23, hr.

HSPF = the heating seasonal performance factor calculated as specified in section 4.2 for the each generalized climatic region and for each standardized design heating requirement within each region, Btu/W.h.

The SEER, $\dot{Q}_c^k(95)$, DHR, and C are the same quantities as defined in section 4.3.1. Figure 1 shows the generalized climatic regions. Table 20 lists standardized design heating requirements.

TABLE 23—REPRESENTATIVE COOLING AND HEATING LOAD HOURS FOR EACH GENERALIZED CLIMATIC REGION

Region	CLH_R	HLH_R
I	2400	750
II	1800	1250
III	1200	1750

TABLE 23—REPRESENTATIVE COOLING AND HEATING LOAD HOURS FOR EACH GENERALIZED CLIMATIC REGION—Continued

Region	CLH_R	HLH_R
IV	800	2250
V	400	2750
VI	200	2750

4.5. Rounding of SEER, HSPF, and APF for reporting purposes. After calculating SEER according to section 4.1, HSPF according to section 4.2, and APF according to section 4.3, round the values off as specified in subpart B 430.23(m) of Title 10 of the Code of Federal Regulations.

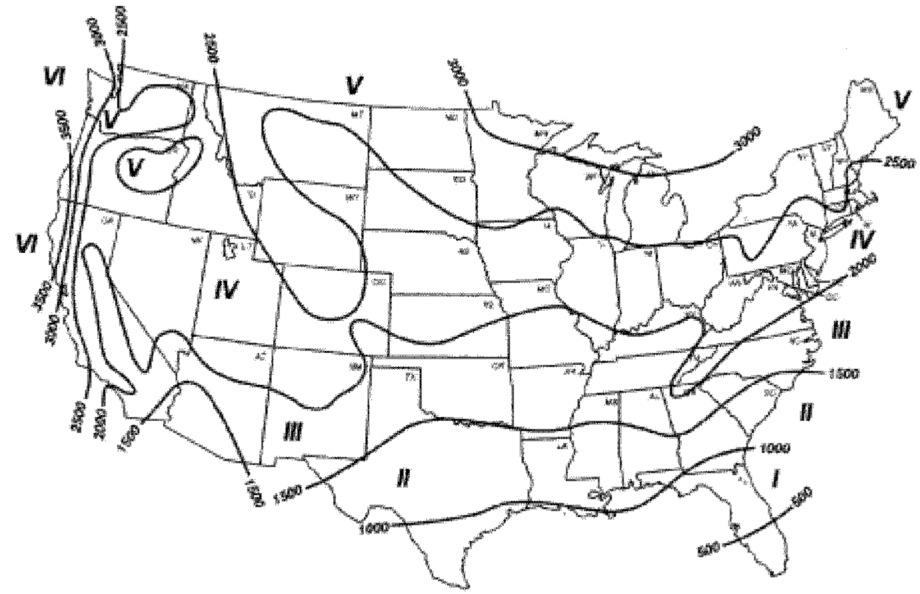

Figure 1—Heating Load Hours (HLH_A) for the United States

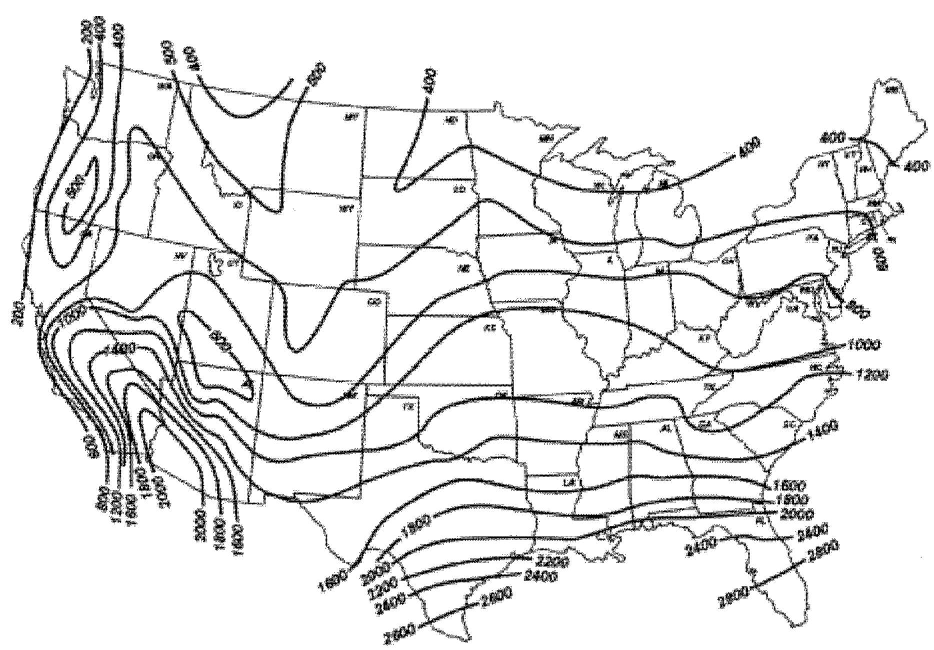

Figure 2—Cooling Load Hours (CLH_A) for the United States

4.6 Calculations of the SHR, which should be computed for different equipment configurations and test conditions specified in Table 24.

TABLE 24—APPLICABLE TEST CONDITIONS FOR CALCULATION OF THE SENSIBLE HEAT RATIO

Equipment configuration	Reference Table No. of Appendix M	SHR computation with results from	Computed values
Units Having a Single-Speed Compressor and a Fixed-Speed Indoor blower, a Constant Air Volume Rate Indoor blower, or No Indoor blower.	4	B Test	SHR(B).
Units Having a Single-Speed Compressor That Meet the Section 3.2.2.1 Indoor Unit Requirements.	5	B2 and B1 Tests	SHR(B1), SHR(B2).
Units Having a Two-Capacity Compressor	6	B2 and B1 Tests	SHR(B1), SHR(B2).
Units Having a Variable-Speed Compressor	7	B2 and B1 Tests	SHR(B1), SHR(B2).

The SHR is defined and calculated as follows:

$$SHR = \frac{Sensible\ Cooling\ Capacity}{Total\ Cooling\ Capacity}$$

$$= \frac{\dot{Q}_{sc}^{k}(T)}{\dot{Q}_{c}^{k}(T)}$$

Where both the total and sensible cooling capacities are determined from the same cooling mode test and calculated from data collected over the same 30-minute data collection interval.

4.7 calculations of the Energy Efficiency Ratio (EER). Calculate the energy efficiency ratio using,

$$EER = \frac{Total\ Cooling\ Capacity}{Total\ Electrical\ Power\ Consumption}$$

$$= \frac{\dot{Q}_{c}^{k}(T)}{\dot{E}_{c}^{k}(T)}$$

Where $\dot{Q}_c^k(T)$ and $\dot{E}_c^k(T)$ are the space cooling capacity and electrical power consumption determined from the 30-minute data collection interval of the same steady-state wet coil cooling mode test and calculated as specified in section 3.3. Add the letter identification for each steady-state test as a subscript (*e.g.,* EER_{A2}) to differentiate among the resulting EER values.

■ 11. Add appendix M1 to subpart B of part 430 to read as follows:

APPENDIX M1 TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF CENTRAL AIR CONDITIONERS AND HEAT PUMPS

Note: Prior to May 9, 2016, any representations, including compliance certifications, made with respect to the energy use, power, or efficiency of central air conditioners and central air conditioning heat pumps must be based on the results of testing pursuant to either Appendix M or the procedures in Appendix M as it appeared at 10 CFR part 430, subpart B, Appendix M, in the 10 CFR parts 200 to 499 edition revised as of January 1, 2015. Any representations made with respect to the energy use or efficiency of such central air conditioners and central air conditioning heat pumps must be in accordance with whichever version is selected.

On or after May 9, 2016 and prior to the compliance date for any amended energy conservation standards, any representations, including compliance certifications, made with respect to the energy use, power, or efficiency of central air conditioners and central air conditioning heat pumps must be based on the results of testing pursuant to Appendix M.

On or after the compliance date for any amended energy conservation standards, any representations, including compliance certifications, made with respect to the energy use, power, or efficiency of central air conditioners and central air conditioning heat pumps must be based on the results of testing pursuant to this appendix (Appendix M1).

1. Scope and Definitions

1.1 Scope.

This test procedure provides a method of determining SEER, EER, HSPF and $P_{W,OFF}$ for central air conditioners and central air conditioning heat pumps including the following categories:

(a) Split-system air conditioners; and single-zone-multiple-coil, multi-split (including VRF), and multi-circuit systems
(b) Split-system heat pumps and single-zone-multiple-coil, multi-split (including VRF), and multi-circuit systems
(c) Single-package air conditioners
(d) Single-package heat pumps
(e) Small-duct, high-velocity systems (including VRF)
(f) Space-constrained products—air conditioners
(g) Space-constrained products—heat pumps

For purposes of this appendix, the Department of Energy incorporates by reference specific sections of several industry standards, as listed in § 430.3. In cases where there is a conflict, the language of the test procedure in this appendix takes precedence over the incorporated standards.

All section references refer to sections within this appendix unless otherwise stated.

1.2. Definitions

Airflow-control settings are programmed or wired control system configurations that control a fan to achieve discrete, differing ranges of airflow—often designated for performing a specific function (*e.g.,* cooling, heating, or constant circulation)—without manual adjustment other than interaction with a user-operable control (*i.e.,* a thermostat) that meets the manufacturer specifications for installed-use. For the purposes of this appendix, manufacturer specifications for installed-use are those found in the product literature shipped with the unit.

Airflow prevention device denotes a device(s) that prevents airflow via natural convection by mechanical means, such as an air damper box, or by means of changes in duct height, such as an upturned duct.

Annual performance factor means the total heating and cooling done by a heat pump in a particular region in one year divided by the total electric energy used in one year.

Blower coil indoor unit means the indoor unit of a split-system central air conditioner or heat pump that includes a refrigerant-to-air heat exchanger coil, may include a cooling-mode expansion device, and includes either an indoor blower housed with the coil or a separate designated air mover such as a furnace or a modular blower (as defined in Appendix AA). *Blower coil system* refers to a split-system that includes one or more blower coil indoor units.

CFR means Code of Federal Regulations.

Coefficient of Performance (COP) means the ratio of the average rate of space heating delivered to the average rate of electrical energy consumed by the heat pump. These rate quantities must be determined from a single test or, if derived via interpolation, must be determined at a single set of operating conditions. COP is a dimensionless quantity. When determined for a ducted unit tested without an indoor blower installed, COP must include the section 3.7and 3.9.1 default values for the heat output and power input of a fan motor.

Coil-only indoor unit means the indoor unit of a split-system central air conditioner or heat pump that includes a refrigerant-to-air heat exchanger coil and may include a cooling-mode expansion device, but does not include an indoor blower housed with the coil, and does not include a separate designated air mover such as a furnace or a modular blower (as defined in Appendix AA). A coil-only indoor unit is designed to use a separately-installed furnace or a modular blower for indoor air movement.

Coil-only system refers to a system that includes one or more coil-only indoor units.

Condensing unit removes the heat absorbed by the refrigerant to transfer it to the outside environment, and which consists of an outdoor coil, compressor(s), and air moving device.

Constant-air-volume-rate indoor blower means a fan that varies its operating speed to provide a fixed air-volume-rate from a ducted system.

Continuously recorded, when referring to a dry bulb measurement, dry bulb temperature used for test room control, wet bulb temperature, dew point temperature, or relative humidity measurements, means that the specified value must be sampled at regular intervals that are equal to or less than 5 seconds.

Cooling load factor (CLF) means the ratio having as its numerator the total cooling delivered during a cyclic operating interval consisting of one ON period and one OFF period. The denominator is the total cooling that would be delivered, given the same ambient conditions, had the unit operated continuously at its steady-state, space-cooling capacity for the same total time (ON + OFF) interval.

Crankcase heater means any electrically powered device or mechanism for intentionally generating heat within and/or around the compressor sump volume often done to minimize the dilution of the compressor's refrigerant oil by condensed refrigerant. Crankcase heater control may be achieved using a timer or may be based on a change in temperature or some other measurable parameter, such that the crankcase heater is not required to operate continuously. A crankcase heater without controls operates continuously when the compressor is not operating.

Cyclic Test means a test where the unit's compressor is cycled on and off for specific time intervals. A cyclic test provides half the information needed to calculate a degradation coefficient.

Damper box means a short section of duct having an air damper that meets the performance requirements of section 2.5.7.

Degradation coefficient (C_D) means a parameter used in calculating the part load factor. The degradation coefficient for cooling is denoted by C_D^c. The degradation coefficient for heating is denoted by C_D^h.

Demand-defrost control system means a system that defrosts the heat pump outdoor coil only when measuring a predetermined degradation of performance. The heat pump's controls monitor one or more parameters that always vary with the amount of frost accumulated on the outdoor coil (*e.g.,* coil to air differential temperature, coil differential air pressure, outdoor fan power or current, optical sensors) at least once for every ten minutes of compressor ON-time when space heating. One acceptable alternative to the criterion given in the prior sentence is a feedback system that measures the length of the defrost period and adjusts defrost frequency accordingly. In all cases, when the frost parameter(s) reaches a predetermined value, the system initiates a defrost. In a demand-defrost control system, defrosts are terminated based on monitoring a parameter(s) that indicates that frost has been eliminated from the coil. (Note: Systems that vary defrost intervals according to outdoor dry-bulb temperature are not demand-defrost systems.) A demand-defrost control system, which otherwise meets the above requirements, may allow time-initiated defrosts if, and only if, such defrosts occur after 6 hours of compressor operating time.

Design heating requirement (DHR) predicts the space heating load of a residence when subjected to outdoor design conditions. Estimates for the DHR are provided for six generalized U.S. climatic regions in section 4.2.

Dry-coil tests are cooling mode tests where the wet-bulb temperature of the air supplied to the indoor coil is maintained low enough that no condensate forms on this coil.

Ducted system means an air conditioner or heat pump that is designed to be permanently installed equipment and delivers conditioned air to the indoor space through a duct(s). The air conditioner or heat pump may be either a split-system or a single-package unit.

Energy efficiency ratio (EER) means the ratio of the average rate of space cooling delivered to the average rate of electrical energy consumed by the air conditioner or heat pump. These rate quantities must be determined from a single test or, if derived via interpolation, must be determined at a single set of operating conditions. EER is expressed in units of

$$\frac{Btu/h}{W}.$$

When determined for a ducted unit tested without an indoor blower installed, EER must include the section 3.3 and 3.5.1 default values for the heat output and power input of a fan motor.

Evaporator coil absorbs heat from an enclosed space and transfers the heat to a refrigerant.

Heat pump means a kind of central air conditioner, which consists of one or more assemblies, utilizing an indoor conditioning coil, compressor, and refrigerant-to-outdoor air heat exchanger to provide air heating, and may also provide air cooling, air dehumidifying, air humidifying, air circulating, and air cleaning.

Heat pump having a heat comfort controller means equipment that regulates the operation of the electric resistance elements to assure that the air temperature leaving the indoor section does not fall below a specified temperature. This specified temperature is usually field adjustable. Heat pumps that actively regulate the rate of electric resistance heating when operating below the balance point (as the result of a second stage call from the thermostat) but do not operate to maintain a minimum delivery temperature are not considered as having a heat comfort controller.

Heating load factor (HLF) means the ratio having as its numerator the total heating delivered during a cyclic operating interval consisting of one ON period and one OFF period. The denominator is the total heating that would be delivered, given the same ambient conditions, if the unit operated continuously at its steady-state space heating capacity for the same total time (ON plus OFF) interval.

Heating season means the months of the year that require heating, *e.g.,* typically, and roughly, October through April.

Heating seasonal performance factor (HSPF) means the total space heating required during the space heating season, expressed in Btu's, divided by the total electrical energy consumed by the heat pump system during the same season, expressed in watt-hours. The HSPF used to evaluate compliance with the Energy Conservation Standards (see 10 CFR 430.32(c)) is based on Region IV, the design heating requirement, and the sampling plan stated in 10 CFR 429.16(a).

Independent coil manufacturer (ICM) means a manufacturer that manufactures indoor units but does not manufacture single-package units or outdoor units.

Indoor unit transfers heat between the refrigerant and the indoor air and consists of an indoor coil and casing and may include a cooling mode expansion device and/or an air moving device.

Multiple-circuit (or multi-circuit) system means a split system that has one outdoor unit and that has two or more indoor units installed on two or more refrigeration circuits such that each refrigeration circuit serves a compressor and one and only one indoor unit, and refrigerant is not shared from circuit to circuit.

Multiple-split (or multi-split) system means a split system that has one outdoor unit and two or more indoor coil-only or indoor blower coil units connected to its other component(s) with a single refrigerant circuit. The indoor units operate independently and can condition multiple zones in response to at least two indoor thermostats or temperature sensors. The outdoor unit operates in response to independent operation of the indoor units based on control input of multiple indoor thermostats or temperature sensors, and/or based on refrigeration circuit sensor input (*e.g.,* suction pressure).

Nominal capacity means the capacity that is claimed by the manufacturer in the product name plate. Nominal cooling capacity is approximate to the air conditioner cooling capacity tested at A or A2 condition. Nominal heating capacity is approximate to the heat pump heating capacity tested in H12 test (or the optional H1N test).

Non-ducted system means a split-system central air conditioner or heat pump that is designed to be permanently installed and that directly heats or cools air within the conditioned space using one or more indoor units that are mounted on room walls and/or ceilings. The system may be of a modular design that allows for combining multiple outdoor coils and compressors to create one overall system.

Normalized Gross Indoor Fin Surface (NGIFS) means the gross fin surface area of the indoor unit coil divided by the cooling capacity measured for the A or A2 Test whichever applies.

Off-mode power consumption means the power consumption when the unit is connected to its main power source but is neither providing cooling nor heating to the building it serves.

Off-mode season means, for central air conditioners, the shoulder season and the entire heating season; and for heat pumps, the shoulder season only.

Outdoor unit transfers heat between the refrigerant and the outdoor air, and consists of an outdoor coil, compressor(s), an air moving device, and in addition for heat pumps, could include a heating mode expansion device, reversing valve, and defrost controls.

Outdoor unit manufacturer (OUM) means a manufacturer of single-package units, outdoor units, and/or both indoor units and outdoor units.

Part-load factor (PLF) means the ratio of the cyclic energy efficiency ratio (coefficient of performance) to the steady-state energy efficiency ratio (coefficient of performance), where both energy efficiency ratios (coefficients of performance) are determined based on operation at the same ambient conditions.

Seasonal energy efficiency ratio (SEER) means the total heat removed from the conditioned space during the annual cooling season, expressed in Btu's, divided by the total electrical energy consumed by the central air conditioner or heat pump during the same season, expressed in watt-hours.

Short ducted system means a ducted split system whose one or more indoor sections produce greater than zero but no greater than 0.1 inches (of water) of external static pressure when operated at the full-load air volume not exceeding 450 cfm per rated ton of cooling.

Shoulder season means the months of the year in between those months that require cooling and those months that require heating, *e.g.,* typically, and roughly, April through May, and September through October.

Single-package unit means any central air conditioner or heat pump that has all major assemblies enclosed in one cabinet.

Single-split-system means a split system that has one outdoor unit and that has one indoor coil-only or indoor blower coil unit connected to its other component(s) with a single refrigeration circuit.

Single-zone-multiple-coil split system means a split system that has one outdoor unit and that has two or more indoor units connected with a single refrigeration circuit. The indoor units operate in unison in response to a single indoor thermostat.

Small-duct, high-velocity system means a system that contains a blower and indoor coil combination that is designed for, and produces, at least 1.2 inches (of water) of external static pressure when operated at the full-load air volume rate of 220–350 cfm per rated ton of cooling. When applied in the field, uses high-velocity room outlets (*i.e.,* generally greater than 1000 fpm) having less than 6.0 square inches of free area.

Split system means any air conditioner or heat pump that has one or more of the major assemblies separated from the others. Split-systems may be either blower coil systems or coil-only systems.

Standard Air means dry air having a mass density of 0.075 lb/ft^3.

Steady-state test means a test where the test conditions are regulated to remain as constant as possible while the unit operates continuously in the same mode.

Temperature bin means the 5 °F increments that are used to partition the outdoor dry-bulb temperature ranges of the cooling (≥65 °F) and heating (<65 °F) seasons.

Test condition tolerance means the maximum permissible difference between the average value of the measured test parameter and the specified test condition.

Test operating tolerance means the maximum permissible range that a measurement may vary over the specified test interval. The difference between the maximum and minimum sampled values must be less than or equal to the specified test operating tolerance.

Tested combination means a single-zone-multiple-coil, multi-split, or multi-circuit system having the following features:

(1) The system consists of one outdoor unit with one or more compressors matched with between two and five indoor units;

(2) The indoor units shall:

(i) Collectively, have a nominal cooling capacity greater than or equal to 95 percent and less than or equal to 105 percent of the nominal cooling capacity of the outdoor unit;

(ii) Represent the highest sales volume model family that can meet the 95 percent nominal cooling capacity of the outdoor unit [Note: another indoor model family may be used if five indoor units from the highest sales volume model family do not provide sufficient capacity to meet the 95 percent threshold level].

(iii) Individually not have a nominal cooling capacity greater than 50 percent of the nominal cooling capacity of the outdoor unit, unless the nominal cooling capacity of the outdoor unit is 24,000 Btu/h or less;

(iv) Operate at fan speeds consistent with manufacturer's specifications; and

(v) All be subject to the same minimum external static pressure requirement while able to produce the same external static pressure at the exit of each outlet plenum when connected in a manifold configuration as required by the test procedure.

(vi) Where referenced, ''nominal cooling capacity'' is to be interpreted for indoor units as the highest cooling capacity listed in published product literature for 95 °F outdoor dry bulb temperature and 80 °F dry bulb, 67 °F wet bulb indoor conditions, and for outdoor units as the lowest cooling capacity listed in published product literature for these conditions. If incomplete or no operating conditions are reported, the highest (for indoor units) or lowest (for outdoor units) such cooing capacity shall be used.

Time-adaptive defrost control system is a demand-defrost control system that measures the length of the prior defrost period(s) and uses that information to automatically determine when to initiate the next defrost cycle.

Time-temperature defrost control systems initiate or evaluate initiating a defrost cycle only when a predetermined cumulative compressor ON-time is obtained. This predetermined ON-time is generally a fixed value (*e.g.,* 30, 45, 90 minutes) although it may vary based on the measured outdoor dry-bulb temperature. The ON-time counter accumulates if controller measurements (*e.g.,* outdoor temperature, evaporator temperature) indicate that frost formation conditions are present, and it is reset/remains at zero at all other times. In one application of the control scheme, a defrost is initiated whenever the counter time equals the predetermined ON-time. The counter is reset when the defrost cycle is completed.

In a second application of the control scheme, one or more parameters are measured (*e.g.,* air and/or refrigerant temperatures) at the predetermined, cumulative, compressor ON-time. A defrost is initiated only if the measured parameter(s) falls within a predetermined range. The ON-time counter is reset regardless of whether or not a defrost is initiated. If systems of this second type use cumulative ON-time intervals of 10 minutes or less, then the heat pump may qualify as having a demand defrost control system (see definition).

Triple-capacity, northern heat pump means a heat pump that provides two stages of cooling and three stages of heating. The two common stages for both the cooling and heating modes are the low capacity stage and the high capacity stage. The additional heating mode stage is the booster capacity stage, which offers the highest heating capacity output for a given set of ambient operating conditions.

Triple-split system means a central air conditioner or heat pump that is composed of three separate components: An outdoor fan coil section, an indoor blower coil section, and an indoor compressor section.

Two-capacity (or two-stage) compressor system means a central air conditioner or heat pump that has a compressor or a group of compressors operating with only two stages of capacity.

For such systems, low capacity means the compressor(s) operating at low stage, or at low load test conditions. The low compressor stage for heating mode tests may be the same or different from the cooling mode value.

For such systems, high capacity means the compressor(s) operating at low stage, or at full load test conditions.

Two-capacity, northern heat pump means a heat pump that has a factory or field-selectable lock-out feature to prevent space cooling at high-capacity. Two-capacity heat pumps having this feature will typically have two sets of ratings, one with the feature disabled and one with the feature enabled. The certified indoor coil model number should reflect whether the ratings pertain to the lockout enabled option via the inclusion of an extra identifier, such as ''+LO''. When testing as a two-capacity, northern heat pump, the lockout feature must remain enabled for all tests.

Variable refrigerant flow (VRF) system means a multi-split system with at least three compressor capacity stages, distributing refrigerant through a piping network to multiple indoor blower coil units each capable of individual zone temperature control, through proprietary zone temperature control devices and a common communications network. Single-phase VRF systems less than 65,000 Btu/h are a kind of central air conditioners and central air conditioning heat pumps.

Variable-speed compressor system means a central air conditioner or heat pump that has a compressor that uses a variable-speed drive to vary the compressor speed to achieve variable capacities.

For such a system, maximum speed means the maximum operating speed, measured by RPM or frequency (Hz), that the unit is designed to operate in cooling mode or heating mode. Maximum speed does not change with ambient temperature, and it can be different from cooling mode to heating mode. Maximum speed does not necessarily mean maximum capacity.

For such systems, minimum speed means the minimum speed, measured by RPM or frequency (Hz), that the unit is designed to operate in cooling mode or heating mode. Minimum speed does not change with ambient temperature, and it can be different from cooling mode to heating mode. Minimum speed does not necessarily mean minimum capacity.

Wet-coil test means a test conducted at test conditions that typically cause water vapor to condense on the test unit evaporator coil.

2. Testing Overview and Conditions

(A) Test VRF systems using ANSI/AHRI Standard 1230–2010 sections 3 (except 3.8, 3.9, 3.13, 3.14, 3.15, 3.16, 3.23, 3.24, 3.26, 3.27, 3.28, 3.29, 3.30, and 3.31), 5.1.3, 5.1.4, 6.1.5 (except Table 8), 6.1.6, and 6.2 (incorporated by reference, see § 430.3) and Appendix M. Where ANSI/AHRI Standard 1230–2010 refers to the Appendix C therein substitute the provisions of this appendix. In cases where there is a conflict, the language of the test procedure in this appendix takes precedence over ANSI/AHRI Standard 1230–2010.

For definitions use section 1 of Appendix M and section 3 of ANSI/AHRI Standard 1230–2010, excluding sections 3.8, 3.9, 3.13, 3.14, 3.15, 3.16, 3.23, 3.24, 3.26, 3.27, 3.28, 3.29, 3.30, and 3.31. For rounding requirements refer to § 430.23 (m). For determination of certified rating requirements refer to § 429.16.

For test room requirements, refer to section 2.1 from Appendix M. For test unit installation requirements refer to sections 2.2.a, 2.2.b, 2.2.c, 2.2.1, 2.2.2, 2.2.3(a), 2.2.3(c), 2.2.4, 2.2.5, and 2.4 to 2.12 from Appendix M, and sections 5.1.3 and 5.1.4 of ANSI/AHRI Standard 1230–2010.

For general requirements for the test procedure refer to section 3.1 of Appendix M, except for sections 3.1.3 and 3.1.4, which are requirements for indoor air volume and outdoor air volume. For indoor air volume and outdoor air volume requirements, refer instead to section 6.1.5 (except Table 8) and 6.1.6 of ANSI/AHRI Standard 1230–2010. For external static pressure requirements, refer to Table 3 in Appendix M.

For the test procedure, refer to sections 3.3 to 3.5 and 3.7 to 3.13 in Appendix M. For cooling mode and heating mode test conditions, refer to section 6.2 of ANSI/AHRI Standard 1230–2010. For calculations of seasonal performance descriptors use section 4 of Appendix M.

(B) For systems other than VRF, only a subset of the sections listed in this test procedure apply when testing and rating a particular unit. Table 1 shows the sections of the test procedure that apply to each system. This table is meant to assist manufacturers in finding the appropriate sections of the test procedure; the appendix sections rather than the table provide the specific requirements for testing, and given the varied nature of available units, manufacturers are responsible for determining which sections apply to each unit tested. To use this table, first refer to the sections listed under ''all units''. Then refer to additional requirements based on:

(1) System configuration(s),

(2) The compressor staging or modulation capability, and

(3) Any special features.

Testing requirements for space-constrained products do not differ from similar equipment that is not space-constrained and thus are not listed separately in this table. Air conditioners and heat pumps are not listed separately in this table, but heating procedures and calculations apply only to heat pumps.

Table 1 Informative Guidance for Using A 1

			Testing conditions	Testing procedures			Calculations		
			General	**General**	**Cooling***	**Heating****	**Gen-eral**	**Cool-ing***	**Heat-ing****
Requirements for All units (except VRF)			2.1; 2.2a-c; 2.2.1; 2.2.4; 2.2.4.1; 2.2.4.1 (1); 2.2.4.2; 2.2.5.1-5; 2.2.5.7-8; 2.3; 2.3.1; 2.3.2; 2.4; 2.4.1a,d; 2.5a-c; 2.5.1; 2.5.2 - 2.5.4.2; 2.5.5 – 2.13	3.1; 3.1.1-3; 3.1.5-9; 3.11; 3.12	3.3; 3.4; 3.5a-i	3.1.4.7; 3.1.10; 3.7a,b,d; 3.8a,d; 3.8.1; 3.9; 3.10	4.4; 4.5; 4.6	4.1	4.2
Additional Requirements	System Configurations (more than one may apply)	Single split-system – blower coil	2.2a(1)		3.1.4.1.1; 3.1.4.1.1a,b; 3.1.4.2a-b; 3.1.4.3a-b	3.1.4.4.1; 3.1.4.4.2; 3.1.4.4.3a-b; 3.1.4.5.1; 3.1.4.5.2a-c; 3.1.4.6a-b			
		Single split-system - coil-only	2.2a(1); 2.2d,c,2.4d; 2.4.2		3.1.4.1.1; 3.1.4.1.1c; 3.1.4.2c; 3.5.1	3.1.4.4.1; 3.1.4.4.2; 3.1.4.4.3c; 3.1.4.5.2d; 3.7c; 3.8b; 3.9f; 3.9.1b			
		Tri-split	2.2a(2)						
		Outdoor unit with no match	2.2e						
		Single-package	2.2.4.1(2); 2.2.5.6b; 2.4.1; 2.4.2		3.1.4.1.1; 3.1.4.1.1a,b; 3.1.4.2a-b; 3.1.4.3a-b	3.1.4.4.1; 3.1.4.4.2; 3.1.4.4.3a-b; 3.1.4.5.1; 3.1.4.5.2a-c; 3.1.4.6a-b			
		Heat pump	2.2.5.6.a						

	Heating-only heat pump		3.1.7	3.1.4.1.1 Table 4	3.1.4.4.3			
	Two-capacity northern heat pump		3.1.4.4.2c; 3.1.4.5.2 c- d	3.2.3c	3.6.3			
	Triple-capacity northern heat pump			3.2.5	3.6.6			4.2.6
	SDHV (non-VRF)	2.2b; 2.4.1c; 2.5.4.3						
	Single- zone-multi-coil split and non-VRF multiple-split with duct	2.2a(1),(3); 2.2.3; 2.4.1b		3.1.4.1.1; 3.1.4.1.1a-b; 3.1.4.2a-b; 3.1.4.3a-b	3.1.4.4.1; 3.1.4.4.2; 3.1.4.4.3a-b; 3.1.4.5.1; 3.1.4.5.2a-c; 3.1.4.6a-b			
	Single-zone-multi-coil split and non-VRF multiple-split, ductless	2.2.a(1),(3); 2.2.3		3.1.4.1.2; 3.1.4.2d; 3.1.4.3c; 3.2.4c; 3.5c,g,h; 3.5.2; 3.8c	3.1.4.4.4; 3.1.4.5.2e; 3.1.4.6c; 3.6.4.c; 3.8c			
	VRF multiple-split[†] and VRF SDHV[†]	2.1; 2.2.a; 2.2.b; 2.2.c; 2.2.1; 2.2.2; 2.2.3(a); 2.2.3(c);, 2.2.4; 2.2.5; 2.4-2.12	3.1 (except 3.1.3, 3.1.4) 3.1.4.1.1c; 3.11-3.13	3.3-3.5	3.7–3.10	4.4; 4.5; 4.6	4.1	4.2
Modulation Capability	Single speed compressor, fixed speed fan			3.2.1	3.6.1		4.1.1	4.2.1
	Single speed compressor, VAV fan		3.1.7	3.2.2	3.6.2		4.1.2	4.2.2
	Two-capacity compressor		3.1.10	3.2.3	3.6.3		4.1.3	4.2.3
	Variable speed compressor			3.2.4	3.6.4		4.1.4	4.2.4
Special Features	Heat pump with heat comfort controller		3.1.9		3.6.5			4.2.5
	Units with a multi-speed outdoor fan	2.2.2						
	Single indoor unit having multiple blowers			3.26	3.6.2; 3.6.7		4.1.5	4.2.7

*Does not apply to heating-only heat pumps.

**Applies only to heat pumps; not to air conditioners.

†Use ANSI/AHRI Standard 1230-2010 with Addendum 2, with the sections referenced in section 2(A) of this Appendix, in conjunction with the sections set forth in the table to perform test setup, testing, and calculations for rating VRF multiple-split and VRF SDHV systems.

NOTE: For all units, use section 3.13 for off mode testing procedures and section 4.3 for off mode calculations. For all units subject to an EER standard, use section 4.7 to determine the energy efficiency ratio.

2.1 Test room requirements.

a. Test using two side-by-side rooms, an indoor test room and an outdoor test room. For multiple-split, single-zone-multi-coil or multi-circuit air conditioners and heat pumps, however, use as many available indoor test rooms as needed to accommodate the total number of indoor units. These rooms must comply with the requirements specified in sections 8.1.2 and 8.1.3 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3).

b. Inside these test rooms, use artificial loads during cyclic tests and Frost Accumulation tests, if needed, to produce stabilized room air temperatures. For one room, select an electric resistance heater(s) having a heating capacity that is approximately equal to the heating capacity of the test unit's condenser. For the second room, select a heater(s) having a capacity that is close to the sensible cooling capacity of the test unit's evaporator. When applied, cycle the heater located in the same room as the test unit evaporator coil ON and OFF when the test unit cycles ON and OFF. Cycle the heater located in the same room as the test unit condensing coil ON and OFF when the test unit cycles OFF and ON.

2.2 Test unit installation requirements.

a. Install the unit according to section 8.2 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3), subject to the following additional requirements:

(1) When testing split systems, follow the requirements given in section 6.1.3.5 of AHRI 210/240–2008 (incorporated by reference, see § 430.3) with Addendum 1 and 2. For the vapor refrigerant line(s), use the insulation included with the unit; if no insulation is provided, refer to the specifications for the insulation in the installation instructions included with the unit by the manufacturer; if no insulation is included with the unit and the installation instructions do not contain provisions for insulating the line(s), fully insulate the vapor refrigerant line(s) with vapor proof insulation having an inside diameter that matches the refrigerant tubing and a nominal thickness of at least 0.5 inches. For the liquid refrigerant line(s), use the insulation included with the unit; if no insulation is provided, refer to the specifications for the insulation in the installation instructions included with the unit by the manufacturer; if no insulation is included with the unit and the installation instructions do not contain provisions for insulating the line(s), leave the liquid refrigerant line(s) exposed to the air for air conditioners and heat pumps that heat and cool; or, for heating-only heat pumps, insulate the liquid refrigerant line(s) with insulation having an inside diameter that matches the refrigerant tubing and a nominal thickness of at least 0.5 inches;

(2) When testing split systems, if the indoor unit does not ship with a cooling mode expansion device, test the system using the device as specified in the installation instructions provided with the indoor unit. If none is specified, test the system using a thermostatic expansion valve with internal pressure equalization that the valve manufacturer's product literature indicates is appropriate for the system.

(3) When testing triple-split systems (see section 1.2, Definitions), use the tubing length specified in section 6.1.3.5 of AHRI 210/240–2008 (incorporated by reference, see § 430.3) with Addendum 1 and 2 to connect the outdoor coil, indoor compressor section, and indoor coil while still meeting the requirement of exposing 10 feet of the tubing to outside conditions; or

(4) When testing split systems having multiple indoor coils, connect each indoor blower-coil to the outdoor unit using:

(a) 25 feet of tubing, or

(b) Tubing furnished by the manufacturer, whichever is longer.

If they are needed to make a secondary measurement of capacity, install refrigerant pressure measuring instruments as described in section 8.2.5 of ASHRAE Standard 37–2009(incorporated by reference, see § 430.3). Refer to section 2.10 of this appendix to learn which secondary methods require refrigerant pressure measurements. At a minimum, insulate the low-pressure line(s) of a split system with insulation having an inside diameter that matches the refrigerant tubing and a nominal thickness of 0.5 inch.

b. For units designed for both horizontal and vertical installation or for both up-flow and down-flow vertical installations, the manufacturer must use the orientation for testing specified in the certification report. Conduct testing with the following installed:

(1) The most restrictive filter(s);

(2) Supplementary heating coils; and

(3) Other equipment specified as part of the unit, including all hardware used by a heat comfort controller if so equipped (see section 1, Definitions). For small-duct, high-velocity systems, configure all balance dampers or restrictor devices on or inside the unit to fully open or lowest restriction.

c. Testing a ducted unit without having an indoor air filter installed is permissible as long as the minimum external static pressure requirement is adjusted as stated in Table 3, note 3 (see section 3.1.4). Except as noted in section 3.1.10, prevent the indoor air supplementary heating coils from operating during all tests. For coil-only indoor units that are supplied without an enclosure, create an enclosure using 1 inch fiberglass ductboard having a nominal density of 6 pounds per cubic foot. Or alternatively, use some other insulating material having a thermal resistance (''R'' value) between 4 and 6 hr·ft^2· °F/Btu. For units where the coil is housed within an enclosure or cabinet, no extra insulating or sealing is allowed.

d. When testing oil-only central air conditioners and heat pumps, install a toroidal-type transformer to power the system's low-voltage components, complying with any additional requirements for this transformer mentioned in the installation manuals included with the unit by the manufacturer. If the installation manuals do not provide specifications for the transformer, use a transformer having the following features:

(1) A nominal volt-amp rating that results in the transformer being loaded at a level that is between 25 and 90 percent based on the highest power value expected and then confirmed during the off mode test;

(2) Designed to operate with a primary input of 230 V, single phase, 60 Hz; and

(3) That provides an output voltage that is within the specified range for each low-voltage component. The power consumption of the components connected to the transformer must be included as part of the total system power consumption during the off mode tests, less if included the power consumed by the transformer when no load is connected to it.

e. An outdoor unit with no match (*i.e.,* that is not sold with indoor units) shall be tested without an indoor blower installed, with a single cooling air volume rate, using an indoor unit whose coil has (1) round tubes of outer diameter no less than 0.375 inches, and (2) a normalized gross indoor fin surface (NGIFS) no greater than 1.15 square inches per British thermal unit per hour (sq. in./Btu/hr). NGIFS is calculated as follows:

$$NGIFS = 2 \times L_f \times W_f \times N_f \div \dot{Q}_c(95)$$

Where,

L_f = Indoor coil fin length in inches, also height of the coil transverse to the tubes.

W_f = Indoor coil fin width in inches, also depth of the coil.

N_f = Number of fins.

$\dot{Q}_c(95)$ = the measured space cooling capacity of the tested outdoor unit/indoor unit combination as determined from the A2 or A Test whichever applies, Btu/h.

2.2.1 Defrost control settings.

Set heat pump defrost controls at the normal settings which most typify those encountered in generalized climatic region IV. (Refer to Figure 1 and Table 19 of section 4.2 for information on region IV.) For heat pumps that use a time-adaptive defrost control system (see section 1.2, Definitions), the manufacturer must specify the frosting interval to be used during Frost Accumulation tests and provide the procedure for manually initiating the defrost at the specified time. To ease testing of any unit, the manufacturer should provide information and any necessary hardware to manually initiate a defrost cycle.

2.2.2 Special requirements for units having a multiple-speed outdoor fan.

Configure the multiple-speed outdoor fan according to the installation manual included with the unit by the manufacturer, and thereafter, leave it unchanged for all tests. The controls of the unit must regulate the operation of the outdoor fan during all lab tests except dry coil cooling mode tests. For dry coil cooling mode tests, the outdoor fan must operate at the same speed used during the required wet coil test conducted at the same outdoor test conditions.

2.2.3 Special requirements for multi-split air conditioners and heat pumps, systems composed of multiple single-zone-multiple-coil split-system units (having multiple outdoor units located side-by-side), and ducted systems using a single indoor section containing multiple blowers that would normally operate using two or more indoor thermostats.

Because these systems will have more than one indoor blower and possibly multiple outdoor fans and compressor systems, references in this test procedure to a singular indoor blower, outdoor fan, and compressor means all indoor blowers, all outdoor fans, and all compressor systems that are energized during the test.

a. Additional requirements for multi-split air conditioners and heat pumps and systems composed of multiple single-zone-multiple-coil split-system units. For any test where the system is operated at part load (*i.e.,* one or more compressors ''off'', operating at the intermediate or minimum compressor speed, or at low compressor capacity), the manufacturer shall designate the indoor coil(s) that are not providing heating or cooling during the test such that the sum of the nominal heating or cooling capacity of the operational indoor units is within 5 percent of the intended part load heating or cooling capacity. For variable-speed systems, the manufacturer must designate at least one indoor unit that is not providing heating or cooling for all tests conducted at minimum compressor speed. For all other part-load tests, the manufacturer shall choose to turn off zero, one, two, or more indoor units. The chosen configuration shall remain unchanged for all tests conducted at the same compressor speed/capacity. For any indoor coil that is not providing heating or cooling during a test, cease forced airflow through this indoor coil and block its outlet duct.

b. Additional requirements for ducted systems with a single indoor section containing multiple blowers where the blowers are designed to cycle on and off independently of one another and are not controlled such that all blowers are modulated to always operate at the same air volume rate or speed. This Appendix covers systems with a single-speed compressor or systems offering two fixed stages of compressor capacity (*e.g.,* a two-speed compressor, two single-speed compressors). For any test where the system is operated at its lowest capacity—*i.e.,* the lowest total air volume rate allowed when operating the single-speed compressor or when operating at low compressor capacity—blowers accounting for at least one-third of the full-load air volume rate must be turned off unless prevented by the controls of the unit. In such cases, turn off as many blowers as permitted by the unit's controls. Where more than one option exists for meeting this ''off'' blower requirement, the manufacturer shall include in its installation manuals included with the unit which blower(s) are turned off. The chosen configuration shall remain unchanged for all tests conducted at the same lowest capacity configuration. For any indoor coil turned off during a test, cease forced airflow through any outlet duct connected to an ''off'' blower.

c. For test setups where it is physically impossible for the laboratory to use the required line length listed in Table 3 of ANSI/AHRI Standard 1230–2010 (incorporated by reference, see § 430.3) with Addendum 2, then the actual refrigerant line length used by the laboratory may exceed the required length and the refrigerant line length correction factors in Table 4 of ANSI/AHRI Standard 1230–2010 with Addendum 2 are applied.

2.2.4 Wet-bulb temperature requirements for the air entering the indoor and outdoor coils.

2.2.4.1 Cooling mode tests.

For wet-coil cooling mode tests, regulate the water vapor content of the air entering the indoor unit to the applicable wet-bulb temperature listed in Tables 4 to 7. As noted in these same tables, achieve a wet-bulb temperature during dry-coil cooling mode tests that results in no condensate forming on the indoor coil. Controlling the water vapor content of the air entering the outdoor side of the unit is not required for cooling mode tests except when testing:

(1) Units that reject condensate to the outdoor coil during wet coil tests. Tables 4–7 list the applicable wet-bulb temperatures.

(2) Single-package units where all or part of the indoor section is located in the outdoor test room. The average dew point temperature of the air entering the outdoor coil during wet coil tests must be within ±3.0 °F of the average dew point temperature of the air entering the indoor coil over the 30-minute data collection interval described in section 3.3. For dry coil tests on such units, it may be necessary to limit the moisture content of the air entering the outdoor side of the unit to meet the requirements of section 3.4.

2.2.4.2 Heating mode tests.

For heating mode tests, regulate the water vapor content of the air entering the outdoor unit to the applicable wet-bulb temperature listed in Tables 11 to 14. The wet-bulb temperature entering the indoor side of the heat pump must not exceed 60 °F. Additionally, if the Outdoor Air Enthalpy test method is used while testing a single-package heat pump where all or part of the outdoor section is located in the indoor test room, adjust the wet-bulb temperature for the air entering the indoor side to yield an indoor-side dew point temperature that is as close as reasonably possible to the dew point temperature of the outdoor-side entering air.

2.2.5 Additional refrigerant charging requirements.

2.2.5.1 The ''manufacturer's published instructions,'' as stated in section 8.2 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3) and ''manufacturer's installation instructions'' discussed in this Appendix mean the manufacturer's installation instructions that come packaged with or appear in the labels applied to the unit. This does not include online manuals. Installation instructions that are shipped with the unit shall take precedence over installation instructions that appear in the labels applied to the unit.

2.2.5.2 Instructions to Use for Charging

a. Where the manufacturer's installation instructions contain two sets of refrigerant charging criteria, one for field installations and one for lab testing, use the field installation criteria.

b. For systems consisting of an outdoor unit manufacturer's outdoor section and indoor section with differing charging procedures the refrigerant charge shall be adjusted per the outdoor installation instructions.

c. For systems consisting of an outdoor unit manufacturer's outdoor section and an independent coil manufacturer's indoor section with differing charging procedures the refrigerant charge shall be adjusted per the indoor installation instructions.

2.2.5.3 Test(s) to Use for Charging

a. Use the tests or operating conditions specified in the manufacturer's installation instructions for charging.

b. If the manufacturer's installation instructions do not specify a test or operating conditions for charging or there are no manufacturer's instructions, use the following test(s):

(1) For air conditioners or cooling and heating heat pumps, use the A or A_2 test.

(2) For cooling and heating heat pumps that do not function in the H1 or $H1_2$ test with the charge set for the A or A_2 test and for heating-only heat pumps, use the H1 or $H1_2$ test.

2.2.5.4 Parameters to Set and Their Target Values

a. Consult the manufacturer's installation instructions regarding which parameters to set and their target values. If the instructions provide ranges of values, select target values equal to the midpoints of the provided ranges.

b. In the event of conflicting information between charging instructions (defined as multiple conditions given for charge adjustment where all conditions specified cannot be met), follow the following hierarchy.

(1) For fixed orifice systems:

(i) Superheat
(ii) High side pressure or corresponding saturation or dew-point temperature
(iii) Low side pressure or corresponding saturation or dew-point temperature
(iv) Low side temperature
(v) High side temperature
(vi) Charge weight

(2) For expansion valve systems:

(i) Subcooling
(ii) High side pressure or corresponding saturation or dew-point temperature
(iii) Low side pressure or corresponding saturation or dew-point temperature
(iv) Approach temperature (difference between temperature of liquid leaving condenser and condenser average inlet air temperature)
(v) Charge weight

c. If there are no installation instructions and/or they do not provide parameters and target values, set superheat to a target value of 12 °F for fixed orifice systems or set subcooling to a target value of 10 °F for expansion valve systems.

2.2.5.5 Charging Tolerances

a. If the manufacturer's installation instructions specify tolerances on target values for the charging parameters, set the values using these tolerances.

b. Otherwise, use the following tolerances for the different charging parameters:

1. Superheat: ±2.0 °F
2. Subcooling: ±0.6 °F
3. High side pressure or corresponding saturation or dew point temperature: ±4.0 psi or ±1.0 °F
4. Low side pressure or corresponding saturation or dew point temperature: ±2.0 psi or ±0.8 °F
5. High side temperature: ±2.0 °F
6. Low side temperature: ±2.0 °F
7. Approach temperature: ±1.0 °F
8. Charge weight: ±2.0 ounce

2.2.5.6 Special Charging Instructions

a. Cooling and Heating Heat Pumps

If, using the initial charge set in the A or A_2 test, the conditions are not within the range specified in manufacturer's instructions for the H1 or $H1_2$ test, make as small as possible an adjustment to obtain conditions for this test in the specified range. After this adjustment, recheck conditions in the A or A_2 test to confirm that they are still within the specified range for this test.

b. Single-Package Systems

Unless otherwise directed by the manufacturer's installation instructions, install one or more refrigerant line pressure gauges during the setup of the unit if setting of refrigerant charge is based on certain operating parameters:

(1) Install a pressure gauge on the liquid line if charging is on the basis of subcooling, or high side pressure or corresponding saturation or dew point temperature;

(2) Install a pressure gauge on the suction line if charging is on the basis of superheat, or low side pressure or corresponding saturation or dew point temperature. If manufacturer's installation instructions indicate that pressure gauges are not to be installed, setting of charge shall not be based on any of the parameters listed in b.(1) and (2) of this section.

2.2.5.7 Near-azeotropic and zeotropic refrigerants.

Charging of near-azeotropic and zeotropic refrigerants shall only be performed with refrigerant in the liquid state.

2.2.5.8 Adjustment of charge between tests.

After charging the system as described in this test procedure, use the set refrigerant charge for all tests used to determine performance. Do not adjust the refrigerant charge at any point during testing.

2.3 Indoor air volume rates.

If a unit's controls allow for overspeeding the indoor blower (usually on a temporary basis), take the necessary steps to prevent overspeeding during all tests.

2.3.1 Cooling tests.

a. Set indoor blower airflow-control settings (*e.g.,* fan motor pin settings, fan motor speed) according to the installation instructions that are provided with the equipment while meeting the airflow requirements that are specified in section 3.1.4. If the manufacturer installation instructions do not provide guidance on the airflow-control settings for a system tested with the indoor blower installed, select the lowest speed that will satisfy the minimum external static pressure specified in section 3.1.4.1.1 with an air volume rate at or higher than the rated full-load cooling air volume rate while meeting the maximum air flow requirement.

b. Express the Cooling Full-load Air Volume Rate, the Cooling Minimum Air Volume Rate, and the Cooling Intermediate Air Volume Rate in terms of standard air.

2.3.2 Heating tests.

a. If needed, set the indoor blower airflow-control settings (*e.g.,* fan motor pin settings, fan motor speed) according to the installation instructions that are provided with the equipment. Do this set-up while meeting all applicable airflow requirements specified in sections 3.1.4. For a cooling and heating heat pump tested with an indoor blower installed, if the manufacturer installation instructions do not provide guidance on the fan airflow-control settings, use the same airflow-control settings used for the cooling test. If the manufacturer installation instructions do not provide guidance on the airflow-control settings for a heating-only heat pump tested with the indoor blower installed, select the lowest speed that will satisfy the minimum external static pressure specified in section 3.1.4.4.3 with an air volume rate at or higher than the rated heating full-load air volume rate.

b. Express the Heating Full-Load Air Volume Rate, the Heating Minimum Air Volume Rate, the Heating Intermediate Air Volume Rate, and the Heating Nominal Air Volume Rate in terms of standard air.

2.4 Indoor coil inlet and outlet duct connections.

Insulate and/or construct the outlet plenum described in section 2.4.1 and, if installed, the inlet plenum described in section 2.4.2 with thermal insulation having a nominal overall resistance (R-value) of at least 19 hr·ft^2· °F/Btu.

2.4.1 Outlet plenum for the indoor unit.

a. Attach a plenum to the outlet of the indoor coil. (NOTE: for some packaged systems, the indoor coil may be located in the outdoor test room.)

b. For systems having multiple indoor coils, or multiple indoor blowers within a single indoor section, attach a plenum to each indoor coil or blower outlet. Connect two or more outlet plenums to a single common duct so that each indoor coil ultimately connects to an airflow measuring apparatus (section 2.6). If using more than one indoor test room, do likewise, creating one or more common ducts within each test room that contains multiple indoor coils. At the plane where each plenum enters a common duct, install an adjustable airflow damper and use it to equalize the static pressure in each plenum. Each outlet air temperature grid (section 2.5.4) and airflow measuring apparatus are located downstream of the inlet(s) to the common duct.

c. For small-duct, high-velocity systems, install an outlet plenum that has a diameter that is equal to or less than the value listed below. The limit depends only on the Cooling Full-Load Air Volume Rate (see section 3.1.4.1.1) and is effective regardless of the flange dimensions on the outlet of the unit (or an air supply plenum adapter accessory, if installed in accordance with the manufacturer's installation instructions).

d. Add a static pressure tap to each face of the (each) outlet plenum, if rectangular, or at four evenly distributed locations along the circumference of an oval or round plenum. Create a manifold that connects the four static pressure taps. Figures 7a, 7b, 7c of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3) shows two of the three options allowed for the manifold configuration; the third option is the broken-ring, four-to-one manifold configuration that is shown in Figure 7a of ASHRAE Standard 37–2009. See Figures 7a, 7b, 7c, and 8 of ASHRAE Standard 37–2009 for the cross-sectional dimensions and minimum length of the (each) plenum and the locations for adding the static pressure taps for units tested with and without an indoor blower installed.

TABLE 2—SIZE OF OUTLET PLENUM

Cooling full-load air volume rate (scfm)	Maximum diameter* of outlet plenum (inches)
≤500	6
501 to 700	7
701 to 900	8
901 to 1100	9
1101 to 1400	10
1401 to 1750	11

* If the outlet plenum is rectangular, calculate its equivalent diameter using ($4A/P$,) where A is the cross-sectional area and P is the perimeter of the rectangular plenum, and compare it to the listed maximum diameter.

2.4.2 Inlet plenum for the indoor unit.

Install an inlet plenum when testing a coil-only indoor unit or a packaged system where the indoor coil is located in the outdoor test room. Add static pressure taps at the center of each face of this plenum, if rectangular, or at four evenly distributed locations along the circumference of an oval or round plenum. Make a manifold that connects the four static-pressure taps using one of the three configurations specified in section 2.4.1. See Figures 7b, 7c, and Figure 8 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3) for cross-sectional dimensions, the minimum length of the inlet plenum, and the locations of the static-pressure taps. When testing a ducted unit having an indoor blower (and the indoor coil is in the indoor test room), test with an inlet plenum installed unless physically prohibited by space limitations within the test room. If used, construct the inlet plenum and add the four static-pressure taps as shown in Figure 8 of ASHRAE Standard 37–2009. If used, the inlet duct size shall equal the size of the inlet opening of the air-handling (blower coil) unit or furnace, with a minimum length of 6 inches. Manifold the four static-pressure taps using one of the three configurations specified in section 2.4.1.d. Never use an inlet plenum when testing a non-ducted system.

2.5 Indoor coil air property measurements and air damper box applications.

Follow instructions for indoor coil air property measurements as described in AHRI 210/240-Draft, appendix E, section E4, unless otherwise instructed in this section.

a. Measure the dry-bulb temperature and water vapor content of the air entering and leaving the indoor coil. If needed, use an air sampling device to divert air to a sensor(s) that measures the water vapor content of the air. See Section 5.3 of ASHRAE Standard 41.1–2013 (incorporated by reference, see § 430.3) for guidance on constructing an air sampling device. No part of the air sampling device or the tubing transferring the sampled air to the sensor shall be within two inches of the test chamber floor, and the transfer tubing shall be insulated. The sampling device may also divert air to a remotely located sensor(s) that measures dry bulb temperature. The air sampling device and the remotely located temperature sensor(s) may be used to determine the entering air dry bulb temperature during any test. The air sampling device and the remotely located leaving air dry bulb temperature sensor(s) may be used for all tests except:

(1) Cyclic tests; and

(2) Frost accumulation tests.

b. An acceptable alternative in all cases, including the two special cases noted above, is to install a grid of dry bulb temperature sensors within the outlet and inlet ducts. Use a temperature grid to get the average dry bulb temperature at one location, leaving or entering, or when two grids are applied as a thermopile, to directly obtain the temperature difference. A grid of temperature sensors (which may also be used for determining average leaving air dry bulb temperature) is required to measure the temperature distribution within a cross-section of the leaving airstream.

c. Use an inlet and outlet air damper box, an inlet upturned duct, or any combination thereof when conducting one or both of the cyclic tests listed in sections 3.2 and 3.6 on ducted systems. Otherwise if not conducting one or both of said cyclic tests, install an outlet air damper box when testing ducted and non-ducted heat pumps that cycle off the indoor blower during defrost cycles if no other means is available for preventing natural or forced convection through the indoor unit when the indoor blower is off. Never use an inlet damper box or an inlet upturned duct when testing a non-ducted system. An inlet upturned duct is a length of ductwork so installed upstream from the inlet such that the indoor duct inlet opening, facing upwards, is sufficiently high to prevent natural convection transfer out of the duct. If an inlet upturned duct is used, install a dry bulb temperature sensor near the inlet opening of the indoor duct at a centerline location not higher than the lowest elevation of the duct edges at the inlet, and ensure that the variation of the dry bulb temperature at this location, measured at least every minute during the compressor OFF period of the cyclic test, does not exceed 1.0 °F.

2.5.1 Test set-up on the inlet side of the indoor coil: For cases where the inlet airflow prevention device is installed.

a. Install an airflow prevention device as specified in section 2.5.1.1 or 2.5.1.2, whichever applies.

b. For an inlet damper box, locate the grid of entering air dry-bulb temperature sensors, if used, and the air sampling device, or the sensor used to measure the water vapor content of the inlet air, at a location immediately upstream of the damper box inlet. For an inlet upturned duct, locate the grid of entering air dry-bulb temperature sensors, if used, and the air sampling device, or the sensor used to measure the water vapor content of the inlet air, at a location at least one foot downstream from the beginning of the insulated portion of the duct but before the static pressure measurement; install a dry-bulb temperature sensor at a centerline location not higher than the lowest elevation of the duct edges at the device inlet.

2.5.1.1 If the section 2.4.2 inlet plenum is installed.

Construct the airflow prevention device having a cross-sectional flow area equal to or greater than the flow area of the inlet plenum. Install the airflow prevention device upstream of the inlet plenum and construct ductwork connecting it to the inlet plenum. If needed, use an adaptor plate or a transition duct section to connect the airflow prevention device with the inlet plenum. Insulate the ductwork and inlet plenum with thermal insulation that has a nominal overall resistance (R-value) of at least 19 hr · ft² · °F/Btu.

2.5.1.2 If the section 2.4.2 inlet plenum is not installed.

Construct the airflow prevention device having a cross-sectional flow area equal to or greater than the flow area of the air inlet of the indoor unit. Install the airflow prevention device immediately upstream of the inlet of the indoor unit. If needed, use an adaptor plate or a short transition duct section to connect the airflow prevention device with the unit's air inlet. Add static pressure taps at the center of each face of a rectangular airflow prevention device, or at four evenly distributed locations along the circumference of an oval or round airflow prevention device. Locate the pressure taps between the airflow prevention device and the inlet of the indoor unit. Make a manifold that connects the four static pressure taps. Insulate the ductwork with thermal insulation that has a nominal overall resistance (R-value) of at least 19 hr·ft² · °F/Btu.

2.5.2 Test set-up on the inlet side of the indoor unit: For cases where no airflow prevention device is installed.

If using the section 2.4.2 inlet plenum and a grid of dry bulb temperature sensors, mount the grid at a location upstream of the static pressure taps described in section 2.4.2, preferably at the entrance plane of the inlet plenum. If the section 2.4.2 inlet plenum is not used, but a grid of dry bulb temperature sensors is used, locate the grid approximately 6 inches upstream from the inlet of the indoor coil. Or, in the case of non-ducted units having multiple indoor coils, locate a grid approximately 6 inches upstream from the inlet of each indoor coil. Position an air sampling device, or the sensor used to measure the water vapor content of the inlet air, immediately upstream of the (each) entering air dry-bulb temperature sensor grid. If a grid of sensors is not used, position the entering air sampling device (or the sensor used to measure the water vapor content of the inlet air) as if the grid were present.

2.5.3 Indoor coil static pressure difference measurement.

Section 6.5.2 of ASHRAE Standard 37–2009 describes the method for fabricating static-pressure taps. Also refer to Figure 2A of ASHRAE Standard 51–07/AMCA Standard 210–07 (incorporated by reference, see § 430.3). Use a differential pressure measuring instrument that is accurate to within ±0.01 inches of water and has a resolution of at least 0.01 inches of water to measure the static pressure difference between the indoor coil air inlet and outlet. Connect one side of the differential pressure instrument to the manifolded pressure taps installed in the outlet plenum. Connect the other side of the instrument to the manifolded pressure taps located in either the inlet plenum or incorporated within the airflow prevention device. If an inlet plenum or inlet airflow prevention device is not used, leave the inlet side of the differential pressure instrument open to the surrounding atmosphere. For non-ducted systems that are tested with multiple outlet plenums, measure the static pressure within each outlet plenum relative to the surrounding atmosphere.

2.5.4 Test set-up on the outlet side of the indoor coil.

a. Install an interconnecting duct between the outlet plenum described in section 2.4.1 and the airflow measuring apparatus described below in section 2.6. The cross-sectional flow area of the interconnecting duct must be equal to or greater than the flow area of the outlet plenum or the common duct used when testing non-ducted units having multiple indoor coils. If needed, use adaptor plates or transition duct sections to allow the connections. To minimize leakage, tape joints within the interconnecting duct (and the outlet plenum). Construct or insulate the entire flow section with thermal insulation having a nominal overall resistance (R-value) of at least 19 hr·ft²· °F/Btu.

b. Install a grid(s) of dry-bulb temperature sensors inside the interconnecting duct. Also, install an air sampling device, or the sensor(s) used to measure the water vapor content of the outlet air, inside the interconnecting duct. Locate the dry-bulb temperature grid(s) upstream of the air sampling device (or the in-duct sensor(s) used to measure the water vapor content of the outlet air). Air that circulates through an air sampling device and past a remote water-vapor-content sensor(s) must be returned to the interconnecting duct at a location:

(1) Downstream of the air sampling device;

(2) Upstream of the outlet air damper box, if installed; and

(3) Upstream of the section 2.6 airflow measuring apparatus.

2.5.4.1 Outlet air damper box placement and requirements.

If using an outlet air damper box (see section 2.5), install it within the interconnecting duct at a location downstream of the location where air from the sampling device is reintroduced or downstream of the in-duct sensor that measures water vapor content of the outlet air. The leakage rate from the combination of the outlet plenum, the closed damper, and the duct section that connects these two components must not exceed 20 cubic feet per minute when a negative pressure of 1 inch of water column is maintained at the plenum's inlet.

2.5.4.2 Procedures to minimize temperature maldistribution.

Use these procedures if necessary to correct temperature maldistributions. Install a mixing device(s) upstream of the outlet air, dry-bulb temperature grid (but downstream of the outlet plenum static pressure taps). Use a perforated screen located between the mixing device and the dry-bulb temperature grid, with a maximum open area of 40 percent. One or both items should help to meet the maximum outlet air temperature distribution specified in section 3.1.8. Mixing devices are described in sections 5.3.2 and 5.3.3 of ASHRAE Standard 41.1–2013 (incorporated by reference, see § 430.3) and section 5.2.2 of ASHRAE Standard 41.2–87 (RA 92) (incorporated by reference, see § 430.3).

2.5.4.3 Minimizing air leakage.

For small-duct, high-velocity systems, install an air damper near the end of the interconnecting duct, just prior to the transition to the airflow measuring apparatus of section 2.6. To minimize air leakage, adjust this damper such that the pressure in the receiving chamber of the airflow measuring apparatus is no more than 0.5 inch of water higher than the surrounding test room ambient. If applicable, in lieu of installing a separate damper, use the outlet air damper box of sections 2.5 and 2.5.4.1 if it allows variable positioning. Also apply these steps to any conventional indoor blower unit that creates a static pressure within the receiving chamber of the airflow measuring apparatus that exceeds the test room ambient pressure by more than 0.5 inches of water column.

2.5.5 Dry bulb temperature measurement.

a. Measure dry bulb temperatures as specified in sections 4, 5.3, 6, 7.2, and 7.3 of ASHRAE Standard 41.1–2013 (incorporated by reference, see § 430.3).

b. Distribute the sensors of a dry-bulb temperature grid over the entire flow area. The required minimum is 9 sensors per grid.

2.5.6 Water vapor content measurement.

Determine water vapor content by measuring dry-bulb temperature combined with the air wet-bulb temperature, dew point temperature, or relative humidity. If used, construct and apply wet-bulb temperature sensors as specified in sections 4, 5, 6, 7.2, 7.3, 7.4, and 7.5 of ASHRAE Standard 41.6–2014 (incorporated by reference, see § 430.3). The temperature sensor (wick removed) must be accurate to within ±0.2 °F. If used, apply dew point hygrometers as specified in sections 4, 5, 6, and 7.1 of ASHRAE Standard 41.6–2014. The dew point hygrometers must be accurate to within ±0.4 °F when operated at conditions that result in the evaluation of dew points above 35 °F. If used, a relative humidity (RH) meter must be accurate to within ±0.7% RH. Other means to determine the psychrometric state of air may be used as long as the measurement accuracy is equivalent to or better than the accuracy achieved from using a wet-bulb temperature sensor that meets the above specifications.

2.5.7 Air damper box performance requirements.

If used (see section 2.5), the air damper box(es) must be capable of being completely opened or completely closed within 10 seconds for each action.

2.6 Airflow measuring apparatus.

a. Fabricate and operate an Air Flow Measuring Apparatus as specified in section 6.2 and 6.3 of ASHRAE Standard 37–2009. Refer to Figure 12 of ASHRAE Standard 51–07/AMCA Standard 210–07 or Figure 14 of ASHRAE Standard 41.2–87 (RA 92) (incorporated by reference, see § 430.3) for guidance on placing the static pressure taps and positioning the diffusion baffle (settling means) relative to the chamber inlet. When measuring the static pressure difference across nozzles and/or velocity pressure at nozzle throats using electronic pressure transducers and a data acquisition system, if high frequency fluctuations cause measurement variations to exceed the test tolerance limits specified in section 9.2 and Table 2 of ASHRAE Standard 37–2009, dampen the measurement system such that the time constant associated with response to a step change in measurement (time for the response to change 63% of the way from the initial output to the final output) is no longer than five seconds.

b. Connect the airflow measuring apparatus to the interconnecting duct section described in section 2.5.4. See sections 6.1.1, 6.1.2, and 6.1.4, and Figures 1, 2, and 4 of ASHRAE Standard 37–2009; and Figures D1, D2, and D4 of AHRI 210/240–2008 (incorporated by reference, see § 430.3) with Addendum 1 and 2 for illustrative examples of how the test apparatus may be applied within a complete laboratory set-up. Instead of following one of these examples, an alternative set-up may be used to handle the air leaving the airflow measuring apparatus and to supply properly conditioned air to the test unit's inlet. The alternative set-up, however, must not interfere with the prescribed means for measuring airflow rate, inlet and outlet air temperatures, inlet and outlet water vapor contents, and external static pressures, nor create abnormal conditions surrounding the test unit. (Note: Do not use an enclosure as described in section 6.1.3 of ASHRAE Standard 37–2009 when testing triple-split units.)

2.7 Electrical voltage supply.

Perform all tests at the voltage specified in section 6.1.3.2 of AHRI 210/240–2008 with Addendum 1 and 2 for ''Standard Rating Tests.'' If the voltage on the nameplate of indoor and outdoor units differs, the voltage supply on the outdoor unit shall be selected for testing. Measure the supply voltage at the terminals on the test unit using a volt meter that provides a reading that is accurate to within ±1.0 percent of the measured quantity.

2.8 Electrical power and energy measurements.

a. Use an integrating power (watt-hour) measuring system to determine the electrical energy or average electrical power supplied to all components of the air conditioner or heat pump (including auxiliary components such as controls, transformers, crankcase heater, integral condensate pump on non-ducted indoor units, etc.). The watt-hour measuring system must give readings that are accurate to within ±0.5 percent. For cyclic tests, this accuracy is required during both the ON and OFF cycles. Use either two different scales on the same watt-hour meter or two separate watt-hour meters. Activate the scale or meter having the lower power rating within 15 seconds after beginning an OFF cycle. Activate the scale or meter having the higher power rating active within 15 seconds prior to beginning an ON cycle. For ducted units tested with a fan installed, the ON cycle lasts from compressor ON to indoor blower OFF. For ducted units tested without an indoor blower installed, the ON cycle lasts from compressor ON to compressor OFF. For non-ducted units, the ON cycle lasts from indoor blower ON to indoor blower OFF. When testing air conditioners and heat pumps having a variable-speed compressor, avoid using an induction watt/watt-hour meter.

b. When performing section 3.5 and/or 3.8 cyclic tests on non-ducted units, provide instrumentation to determine the average electrical power consumption of the indoor blower motor to within ±1.0 percent. If required according to sections 3.3, 3.4, 3.7, 3.9.1, and/or 3.10, this same instrumentation requirement applies when testing air conditioners and heat pumps having a variable-speed constant-air-volume-rate indoor blower or a variable-speed, variable-air-volume-rate indoor blower.

2.9 Time measurements.

Make elapsed time measurements using an instrument that yields readings accurate to within ±0.2 percent.

2.10 Test apparatus for the secondary space conditioning capacity measurement.

For all tests, use the Indoor Air Enthalpy Method to measure the unit's capacity. This method uses the test set-up specified in sections 2.4 to 2.6. In addition, for all steady-state tests, conduct a second, independent measurement of capacity as described in section 3.1.1. For split systems, use one of the following secondary measurement methods: Outdoor Air Enthalpy Method, Compressor Calibration Method, or Refrigerant Enthalpy Method. For single-package units, use either the Outdoor Air Enthalpy Method or the Compressor Calibration Method as the secondary measurement.

2.10.1 Outdoor Air Enthalpy Method.

a. To make a secondary measurement of indoor space conditioning capacity using the Outdoor Air Enthalpy Method, do the following:

(1) Measure the electrical power consumption of the test unit;

(2) Measure the air-side capacity at the outdoor coil; and

(3) Apply a heat balance on the refrigerant cycle.

b. The test apparatus required for the Outdoor Air Enthalpy Method is a subset of the apparatus used for the Indoor Air Enthalpy Method. Required apparatus includes the following:

(1) On the outlet side, an outlet plenum containing static pressure taps (sections 2.4, 2.4.1, and 2.5.3),

(2) An airflow measuring apparatus (section 2.6),

(3) A duct section that connects these two components and itself contains the instrumentation for measuring the dry-bulb temperature and water vapor content of the air leaving the outdoor coil (sections 2.5.4, 2.5.5, and 2.5.6), and

(4) On the inlet side, a sampling device and temperature grid (section 2.11b.).

c. During the preliminary tests described in sections 3.11.1 and 3.11.1.1, measure the evaporator and condenser temperatures or pressures. On both the outdoor coil and the indoor coil, solder a thermocouple onto a return bend located at or near the midpoint of each coil or at points not affected by vapor superheat or liquid subcooling. Alternatively, if the test unit is not sensitive to the refrigerant charge, install pressure gages to the access valves or to ports created from tapping into the suction and discharge lines according to sections 7.4.2 and 8.2.5 of ASHRAE Standard 37–2009. Use this alternative approach when testing a unit charged with a zeotropic refrigerant having a temperature glide in excess of 1 °F at the specified test conditions.

2.10.2 Compressor Calibration Method.

Measure refrigerant pressures and temperatures to determine the evaporator superheat and the enthalpy of the refrigerant that enters and exits the indoor coil. Determine refrigerant flow rate or, when the superheat of the refrigerant leaving the evaporator is less than 5 °F, total capacity from separate calibration tests conducted under identical operating conditions. When using this method, install instrumentation, measure refrigerant properties, and adjust the refrigerant charge according to section 7.4.2 and 8.2.5 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3). Use refrigerant temperature and pressure measuring instruments that meet the specifications given in sections 5.1.1 and 5.2 of ASHRAE Standard 37–2009.

2.10.3 Refrigerant Enthalpy Method.

For this method, calculate space conditioning capacity by determining the refrigerant enthalpy change for the indoor coil and directly measuring the refrigerant flow rate. Use section 7.5.2 of ASHRAE Standard 37–2009 for the requirements for this method, including the additional instrumentation requirements, and information on placing the flow meter and a sight glass. Use refrigerant temperature, pressure, and flow measuring instruments that meet the specifications given in sections 5.1.1, 5.2, and 5.5.1 of ASHRAE Standard 37–2009. Refrigerant flow measurement device(s), if used, must be elevated at least two feet from the test chamber floor or placed upon insulating material having a total thermal resistance of at least R–12 and extending at least one foot laterally beyond each side of the device(s)' exposed surfaces, unless the device(s) are elevated at least two feet from the floor.

2.11 Measurement of test room ambient conditions.

Follow instructions for measurement of test room ambient conditions as described in AHRI 210/240-Draft, appendix E, section E4, (incorporated by reference, see § 430.3) unless otherwise instructed in this section.

a. If using a test set-up where air is ducted directly from the conditioning apparatus to the indoor coil inlet (see Figure 2, Loop Air-Enthalpy Test Method Arrangement, of ASHRAE Standard 37–2009), add instrumentation to permit measurement of the indoor test room dry-bulb temperature.

b. For the outdoor side, install a grid of evenly-distributed sensors on every air-permitting face on the inlet of the outdoor unit, such that each measurement represents an air-inlet area of no more than one square foot. This grid must be constructed and applied as per section 5.3 of ASHRAE Standard 41.1–2013 (incorporated by reference, see § 430.3). The maximum and minimum temperatures measured by these sensors may differ by no more than 1.5 °F—otherwise adjustments to the test room must be made to improve temperature uniformity. The outdoor conditions shall be verified with the air collected by air sampling device. Air collected by an air sampling device at the air inlet of the outdoor unit for transfer to sensors for measurement of temperature and/or humidity shall be protected from temperature change as follows: Any surface of the air conveying tubing in contact with surrounding air at a different temperature than the sampled air shall be insulated with thermal insulation with a nominal thermal resistance (R-value) of at least 19 hr · ft² · °F/Btu, no part of the air sampling device or the tubing conducting the sampled air to the sensors shall be within two inches of the test chamber floor, and pairs of measurements (*e.g.* dry bulb temperature and wet bulb temperature) used to determine water vapor content of sampled air shall be measured in the same location. Take steps (*e.g.,* add or re-position a lab circulating fan), as needed, to maximize temperature uniformity within the outdoor test room. However, ensure that any fan used for this purpose does not cause air velocities in the vicinity of the test unit to exceed 500 feet per minute.

c. Measure dry bulb temperatures as specified in sections 4, 5, 7.2, 6, and 7.3 of ASHRAE Standard 41.1–2013. Measure water vapor content as stated above in section 2.5.6.

2.12 Measurement of indoor blower speed.

When required, measure fan speed using a revolution counter, tachometer, or stroboscope that gives readings accurate to within ±1.0 percent.

2.13 Measurement of barometric pressure.

Determine the average barometric pressure during each test. Use an instrument that meets the requirements specified in section 5.2 of ASHRAE Standard 37–2009.

3. Testing Procedures.

3.1 General Requirements.

If, during the testing process, an equipment set-up adjustment is made that would have altered the performance of the unit during any already completed test, then repeat all tests affected by the adjustment. For cyclic tests, instead of maintaining an air volume rate, for each airflow nozzle, maintain the static pressure difference or velocity pressure during an ON period at the same pressure difference or velocity pressure as measured during the steady-state test conducted at the same test conditions.

Use the testing procedures in this section to collect the data used for calculating

(1) Performance metrics for central air conditioners and heat pumps during the cooling season;

(2) Performance metrics for heat pumps during the heating season; and

(3) Power consumption metric(s) for central air conditioners and heat pumps during the off mode season(s).

3.1.1 Primary and secondary test methods.

For all tests, use the Indoor Air Enthalpy Method test apparatus to determine the unit's space conditioning capacity. The procedure and data collected, however, differ slightly depending upon whether the test is a steady-state test, a cyclic test, or a Frost Accumulation test. The following sections described these differences. For all steady-state tests (*i.e.,* the A, A_2, A_1, B, B_2, B_1, C, C_1, EV, F_1, G_1, $H0_1$, H_1, $H1_2$, $H1_1$, HI_N, H_3, $H3_2$, and $H3_1$ Tests), in addition, use one of the acceptable secondary methods specified in section 2.10 to determine indoor space conditioning capacity. Calculate this secondary check of capacity according to section 3.11. The two capacity measurements must agree to within 6 percent to constitute a valid test. For this capacity comparison, use the Indoor Air Enthalpy Method capacity that is calculated in section 7.3 of ASHRAE Standard 37–2009 (and, if testing a coil-only system, do not make the after-test fan heat adjustments described in section 3.3, 3.4, 3.7, and 3.10 of this appendix). However, include the appropriate section 3.3 to 3.5 and 3.7 to 3.10 fan heat adjustments within the Indoor Air Enthalpy Method capacities used for the section 4 seasonal calculations.

3.1.2 Manufacturer-provided equipment overrides.

Where needed, the manufacturer must provide a means for overriding the controls of the test unit so that the compressor(s) operates at the specified speed or capacity and the indoor blower operates at the specified speed or delivers the specified air volume rate.

3.1.3 Airflow through the outdoor coil.

For all tests, meet the requirements given in section 6.1.3.4 of AHRI 210/240–2008 (incorporated by reference, see § 430.3) with Addendum 1 and 2 when obtaining the airflow through the outdoor coil.

3.1.3.1 Double-ducted.

For products intended to be installed with the outdoor airflow ducted, the unit shall be installed with outdoor coil ductwork installed per manufacturer installation instructions and shall operate between 0.10 and 0.15 in H_2O external static pressure. External static pressure measurements shall be made in accordance with ASHRAE Standard 37–2009 Section 6.4 and 6.5.

3.1.4 Airflow through the indoor coil.

Airflow setting(s) shall be determined before testing begins. Unless otherwise specified within this or its subsections, no changes shall be made to the airflow setting(s) after initiation of testing.

3.1.4.1 Cooling Full-load Air Volume Rate.

3.1.4.1.1 Cooling Full-Load Air Volume Rate for Ducted Units.

The manufacturer must specify the cooling full-load air volume rate and the instructions for setting fan speed or controls. Adjust the cooling full-load air volume rate if needed to satisfy the additional requirements of this section. First, when conducting the A or A_2 Test (exclusively), the measured air volume rate, when divided by the measured indoor air-side total cooling capacity must not exceed 37.5 cubic feet per minute of standard air (scfm) per 1000 Btu/h. If this ratio is exceeded, reduce the air volume rate until this ratio is equaled. Use this reduced air volume rate for all tests that call for using the Cooling Full-load Air Volume Rate. Pressure requirements are as follows:

a. For all ducted units tested with an indoor blower installed, except those having a constant-air-volume-rate indoor blower:

1. Achieve the Cooling Full-load Air Volume Rate, determined in accordance with the previous paragraph;

2. Measure the external static pressure;

3. If this pressure is equal to or greater than the applicable minimum external static pressure cited in Table 3, the pressure requirement is satisfied. Use the current air volume rate for all tests that require the Cooling Full-load Air Volume Rate.

4. If the Table 3 minimum is not equaled or exceeded,

4a. reduce the air volume rate and increase the external static pressure by adjusting the exhaust fan of the airflow measuring apparatus until the applicable Table 3 minimum is equaled or

4b. until the measured air volume rate equals 90 percent of the air volume rate from step 1, whichever occurs first.

5. If the conditions of step 4a occur first, the pressure requirement is satisfied. Use the step 4a reduced air volume rate for all tests that require the Cooling Full-load Air Volume Rate.

6. If the conditions of step 4b occur first, make an incremental change to the set-up of the indoor blower (*e.g.,* next highest fan motor pin setting, next highest fan motor speed) and repeat the evaluation process beginning at above step 1. If the indoor blower set-up cannot be further changed, reduce the air volume rate and increase the external static pressure by adjusting the exhaust fan of the airflow measuring apparatus until the applicable Table 3 minimum is equaled. Use this reduced air volume rate for all tests that require the Cooling Full-load Air Volume Rate.

b. For ducted units that are tested with a constant-air-volume-rate indoor blower installed. For all tests that specify the Cooling Full-load Air Volume Rate, obtain an external static pressure as close to (but not less than) the applicable Table 3 value that does not cause automatic shutdown of the indoor blower or air volume rate variation Q_{Var}, defined as follows, greater than 10 percent.

$$Q_{Var} = \left[\frac{Q_{max} - Q_{min}}{\left(\frac{Q_{max} + Q_{min}}{2}\right)}\right] * 100$$

Where,

Q_{max} = maximum measured airflow value
Q_{min} = minimum measured airflow value
Q_{Var} = airflow variance, percent

Additional test steps as described in section 3.3.(e) of this appendix are required if the measured external static pressure exceeds the target value by more than 0.03 inches of water.

c. For ducted units that are tested without an indoor blower installed. For the A or A_2 Test, (exclusively), the pressure drop across the indoor coil assembly must not exceed 0.30 inches of water. If this pressure drop is exceeded, reduce the air volume rate until the measured pressure drop equals the specified maximum. Use this reduced air volume rate for all tests that require the Cooling Full-load Air Volume Rate.

TABLE 3—MINIMUM EXTERNAL STATIC PRESSURE FOR DUCTED SYSTEMS TESTED WITH AN INDOOR BLOWER INSTALLED

Rated Cooling [1] or heating [2] capacity (Btu/h)	Minimum external static pressure [3] (Inches of water)		
	Short ducted systems [6]	Small-duct, high-velocity systems [4] [5]	All other systems
≤28,800	0.03	1.10	0.45
≥29,000 and ≤42,500	0.05	1.15	0.50
≥43,000	0.07	1.20	0.55

[1] For air conditioners and heat pumps, the value cited by the manufacturer in published literature for the unit's capacity when operated at the *A* or A_2 Test conditions.
[2] For heating-only heat pumps, the value the manufacturer cites in published literature for the unit's capacity when operated at the *H1* or $H1_2$ Test conditions.
[3] For ducted units tested without an air filter installed, increase the applicable tabular value by 0.08 inches of water. For ducted units for which the indoor blower installed for testing is the fan of a condensing gas furnace, decrease the applicable tabular value by 0.10 inches of water (make both adjustments if they both apply). If the adjusted value is less than zero, readjust it to zero.
[4] See section 1.2, Definitions, to determine if the equipment qualifies as a small-duct, high-velocity system.
[5] If a closed-loop, air-enthalpy test apparatus is used on the indoor side, limit the resistance to airflow on the inlet side of the indoor blower coil to a maximum value of 0.1 inch of water. Impose the balance of the airflow resistance on the outlet side of the indoor blower.
[6] See section 1.2. Definitions.

d. For ducted systems having multiple indoor blowers within a single indoor section, obtain the full-load air volume rate with all blowers operating unless prevented by the controls of the unit. In such cases, turn on the maximum number of blowers permitted by the unit's controls. Where more than one option exists for meeting this ''on'' blower requirement, which blower(s) are turned on must match that specified by the manufacturer in the installation manuals included with the unit. Conduct section 3.1.4.1.1 setup steps for each blower separately. If two or more indoor blowers are connected to a common duct as per section 2.4.1, either turn off the other indoor blowers connected to the same common duct or temporarily divert their air volume to the test room when confirming or adjusting the setup configuration of individual blowers. If the indoor blowers are all the same size or model, the target air volume rate for each blower plenum equals the full-load air volume rate divided by the number of ''on'' blowers. If different size blowers are used within the indoor section, the allocation of the system's full-load air volume rate assigned to each ''on'' blower must match that specified by the manufacturer in the installation manuals included with the unit.

3.1.4.1.2 Cooling Full-load Air Volume Rate for Non-ducted Units.

For non-ducted units, the Cooling Full-load Air Volume Rate is the air volume rate that results during each test when the unit is operated at an external static pressure of zero inches of water.

3.1.4.2 Cooling Minimum Air Volume Rate.

The manufacturer must specify the cooling minimum air volume rate and the instructions for setting fan speed or controls. The target external static pressure, ΔP_{st_i}, for any test ''i'' with a specified air volume rate not equal to the cooling full-load air volume rate is determined as follows.

$$\Delta P_{st\_i} = \Delta P_{st\_full} \left[\frac{Q_i}{Q_{full}}\right]^2$$

Where:

ΔP_{st_i} = target minimum external static pressure for test i;

ΔP_{st_full} = minimum external static pressure for test A or A_2 (Table 3);

Q_i = air volume rate for test i; and

Q_{full} = cooling full-load air volume rate as measured after setting and/or adjustment as described in section 3.1.4.1.1.

a. For ducted units tested with an indoor blower installed that is not a constant-air-volume indoor blower, adjust for external static pressure as follows.

1. Achieve the manufacturer-specified cooling minimum air volume rate;

2. Measure the external static pressure;

3. If this pressure is equal to or greater than the target minimum external static pressure calculated as described above, use the current air volume rate for all tests that require the cooling minimum air volume rate.

4. If the target minimum is not equaled or exceeded,

4a. reduce the air volume rate and increase the external static pressure by adjusting the exhaust fan of the airflow measuring apparatus until the applicable target minimum is equaled or

4b. until the measured air volume rate equals 90 percent of the air volume rate from step 1, whichever occurs first.

5. If the conditions of step 4a occur first, use the step 4a reduced air volume rate for all tests that require the cooling minimum air volume rate.

6. If the conditions of step 4b occur first, make an incremental change to the set-up of the indoor fan (*e.g.,* next highest fan motor pin setting, next highest fan motor speed) and repeat the evaluation process beginning at above step 1. If the indoor fan set-up cannot be further changed, reduce the air volume rate and increase the external static pressure by adjusting the exhaust fan of the airflow measuring apparatus until the applicable target minimum is equaled. Use this reduced air volume rate for all tests that require the cooling minimum air volume rate.

b. For ducted units with constant-air-volume indoor blowers, conduct all tests that specify the cooling minimum air volume rate—(*i.e.,* the A_1, B_1, C_1, F_1, and G_1 Tests)—at an external static pressure that does not cause an automatic shutdown of the indoor blower or air volume rate variation Q_{Var}, defined in section 3.1.4.1.1.b, greater than 10 percent, while being as close to, but not less than the target minimum external static pressure. Additional test steps as described in section 3.3(e) of this appendix are required if the measured external static pressure exceeds the target value by more than 0.03 inches of water.

c. For ducted two-capacity units that are tested without an indoor blower installed, the Cooling Minimum Air Volume Rate is the higher of (1) the rate specified by the installation instructions included with the unit by the manufacturer or (2) 75 percent of the Cooling Full-load Air Volume Rate. During the laboratory tests on a coil-only (fanless) unit, obtain this Cooling Minimum Air Volume Rate regardless of the pressure drop across the indoor coil assembly.

d. For non-ducted units, the Cooling Minimum Air Volume Rate is the air volume rate that results during each test when the unit operates at an external static pressure of zero inches of water and at the indoor fan setting used at low compressor capacity (two-capacity system) or minimum compressor speed (variable-speed system). For units having a single-speed compressor and a variable-speed variable-air-volume-rate indoor fan, use the lowest fan setting allowed for cooling.

e. For ducted systems having multiple indoor blowers within a single indoor section, operate the indoor blowers such that the lowest air volume rate allowed by the unit's controls is obtained when operating the lone single-speed compressor or when operating at low compressor capacity while meeting the requirements of section 2.2.3.2 for the minimum number of blowers that must be turned off. Adjust for external static pressure and if necessary adjust air volume rates as described in section 3.1.4.2.a if the indoor fan is not a constant-air-volume indoor fan or as described in section 3.1.4.2.b if the indoor fan is a constant-air-volume indoor fan. The sum of the individual ''on'' blowers' air volume rates is the cooling minimum air volume rate for the system.

3.1.4.3 Cooling Intermediate Air Volume Rate.

The manufacturer must specify the cooling intermediate air volume rate and the instructions for setting fan speed or controls. Calculate target minimum external static pressure as described in section 3.1.4.2.

a. For ducted units tested with an indoor blower, installed that is not a constant-air-volume indoor blower, adjust for external static pressure as described in section 3.1.4.2.a for cooling minimum air volume rate.

b. For ducted units tested with constant-air-volume indoor blowers installed, conduct the E_V Test at an external static pressure that does not cause an automatic shutdown of the indoor blower or air volume rate variation Q_{Var}, defined in section 3.1.4.1.1.b, greater than 10 percent, while being as close to, but not less than the target minimum external static pressure. Additional test steps as described in section 3.3(e) of this appendix are required if the measured external static pressure exceeds the target value by more than 0.03 inches of water.

c. For non-ducted units, the Cooling Intermediate Air Volume Rate is the air volume rate that results when the unit operates at an external static pressure of zero inches of water and at the fan speed selected by the controls of the unit for the E_V Test conditions.

3.1.4.4 Heating Full-load Air Volume Rate.

3.1.4.4.1 Ducted heat pumps where the Heating and Cooling Full-load Air Volume Rates are the same.

a. Use the Cooling Full-load Air Volume Rate as the Heating Full-load Air Volume Rate for:

1. Ducted heat pumps tested with an indoor blower installed that is not a constant-air-volume indoor blower that operates at the same airflow-control setting during both the A (or A_2) and the H1 (or $H1_2$) Tests;

2. Ducted heat pumps tested with constant-air-flow indoor blowers installed that provide the same air flow for the A (or A_2) and the H1 (or $H1_2$) Tests; and

3. Ducted heat pumps that are tested without an indoor blower installed (except two-capacity northern heat pumps that are tested only at low capacity cooling—see 3.1.4.4.2).

b. For heat pumps that meet the above criteria ''1'' and ''3,'' no minimum requirements apply to the measured external or internal, respectively, static pressure. For heat pumps that meet the above criterion ''2,'' test at an external static pressure that does not cause an automatic shutdown of the indoor blower or air volume rate variation Q_{Var}, defined in section 3.1.4.1.1.b, greater than 10 percent, while being as close to, but not less than, the same Table 3 minimum external static pressure as was specified for the A (or A_2) cooling mode test. Additional test steps as described in section 3.9.1(c) of this appendix are required if the measured external static pressure exceeds the target value by more than 0.03 inches of water.

3.1.4.4.2 Ducted heat pumps where the Heating and Cooling Full-load Air Volume Rates are different due to indoor blower operation.

The manufacturer must specify the heating full-load air volume rate and the instructions for setting fan speed or controls. Calculate target minimum external static pressure as described in section 3.1.4.2.

a. For ducted heat pumps tested with an indoor blower installed that is not a constant-air-volume indoor blower, adjust for external static pressure as described in section 3.1.4.2.a for cooling minimum air volume rate.

b. For ducted heat pumps tested with constant-air-volume indoor blowers installed, conduct all tests that specify the heating full-load air volume rate at an external static pressure that does not cause an automatic shutdown of the indoor blower or air volume rate variation Q_{Var}, defined in section 3.1.4.1.1.b, greater than 10 percent, while being as close to, but not less than the target minimum external static pressure. Additional test steps as described in section 3.9.1(c) of this appendix are required if the measured external static pressure exceeds the target value by more than 0.03 inches of water.

c. When testing ducted, two-capacity northern heat pumps (see section 1.2, Definitions), use the appropriate approach of the above two cases for units that are tested with an indoor blower installed. For coil-only northern heat pumps, the Heating Full-load Air Volume Rate is the lesser of the rate specified by the manufacturer in the installation instructions included with the unit or 133 percent of the Cooling Full-load Air Volume Rate. For this latter case, obtain the Heating Full-load Air Volume Rate regardless of the pressure drop across the indoor coil assembly.

d. For ducted systems having multiple indoor blowers within a single indoor section, obtain the heating full-load air volume rate using the same ''on'' blowers as used for the cooling full-load air volume rate. For systems where individual blowers regulate the speed (as opposed to the cfm) of the indoor blower, use the first section 3.1.4.2 equation for each blower individually. Sum the individual blower air volume rates to obtain the heating full-load air volume rate for the system.

3.1.4.4.3 Ducted heating-only heat pumps.

The manufacturer must specify the Heating Full-load Air Volume Rate.

a. For all ducted heating-only heat pumps tested with an indoor blower installed, except those having a constant-air-volume-rate indoor blower. Conduct the following steps only during the first test, the H1 or $H1_2$ Test.

1. Achieve the Heating Full-load Air Volume Rate.

2. Measure the external static pressure.

3. If this pressure is equal to or greater than the Table 3 minimum external static pressure that applies given the heating-only heat pump's rated heating capacity, use the current air volume rate for all tests that require the Heating Full-load Air Volume Rate.

4. If the Table 3 minimum is not equaled or exceeded,

4a. reduce the air volume rate and increase the external static pressure by adjusting the exhaust fan of the airflow measuring apparatus until the applicable Table 3 minimum is equaled or

4b. until the measured air volume rate equals 90 percent of the manufacturer-specified Full-load Air Volume Rate, whichever occurs first.

5. If the conditions of step 4a occurs first, use the step 4a reduced air volume rate for all tests that require the Heating Full-load Air Volume Rate.

6. If the conditions of step 4b occur first, make an incremental change to the set-up of the indoor blower (*e.g.,* next highest fan motor pin setting, next highest fan motor speed) and repeat the evaluation process beginning at above step 1. If the indoor blower set-up cannot be further changed, reduce the air volume rate until the applicable Table 3 minimum is equaled. Use this reduced air volume rate for all tests that require the Heating Full-load Air Volume Rate.

b. For ducted heating-only heat pumps that are tested with a constant-air-volume-rate indoor blower installed. For all tests that specify the Heating Full-load Air Volume Rate, obtain an external static pressure that does not cause an automatic shutdown of the indoor blower or air volume rate variation Q_{Var}, defined in section 3.1.4.1.1.b, greater than 10 percent, while being as close to, but not less than, the applicable Table 3 minimum. Additional test steps as described in section 3.9.1(c) of this appendix are required if the measured external static pressure exceeds the target value by more than 0.03 inches of water.

c. For ducted heating-only heat pumps that are tested without an indoor blower installed. For the H1 or $H1_2$ Test, (exclusively), the pressure drop across the indoor coil assembly must not exceed 0.30 inches of water. If this pressure drop is exceeded, reduce the air volume rate until the measured pressure drop equals the specified maximum. Use this reduced air volume rate for all tests that require the Heating Full-load Air Volume Rate.

3.1.4.4.4 Non-ducted heat pumps, including non-ducted heating-only heat pumps.

For non-ducted heat pumps, the Heating Full-load Air Volume Rate is the air volume rate that results during each test when the unit operates at an external static pressure of zero inches of water.

3.1.4.5 Heating Minimum Air Volume Rate.

3.1.4.5.1 Ducted heat pumps where the Heating and Cooling Minimum Air Volume Rates are the same.

a. Use the Cooling Minimum Air Volume Rate as the Heating Minimum Air Volume Rate for:

1. Ducted heat pumps tested with an indoor blower installed that is not a constant-air-volume indoor blower that operates at the same airflow-control setting during both the A_1 and the $H1_1$ tests; 2. Ducted heat pumps tested with constant-air-flow indoor blowers installed that provide the same air flow for the A_1 and the $H1_1$ Tests; and

3. Ducted heat pumps that are tested without an indoor blower installed (except two-capacity northern heat pumps that are tested only at low capacity cooling—see 3.1.4.4.2).

b. For heat pumps that meet the above criteria ''1'' and ''3,'' no minimum requirements apply to the measured external or internal, respectively, static pressure. For heat pumps that meet the above criterion ''2,'' test at an external static pressure that does not cause an automatic shutdown of the indoor blower or air volume rate variation Q_{Var}, defined in section 3.1.4.1.1.b, greater than 10 percent, while being as close to, but not less than, the same target minimum external static pressure as was specified for the A_1 cooling mode test. Additional test steps as described in section 3.9.1(c) of this appendix are required if the measured external static pressure exceeds the target value by more than 0.03 inches of water.

3.1.4.5.2 Ducted heat pumps where the Heating and Cooling Minimum Air Volume Rates are different due to indoor blower operation.

The manufacturer must specify the heating minimum volume rate and the instructions for setting fan speed or controls. Calculate target minimum external static pressure as described in section 3.1.4.2.

a. For ducted heat pumps tested with an indoor blower installed that is not a constant-air-volume indoor blower, adjust for external static pressure as described in section 3.1.4.2.a for cooling minimum air volume rate.

b. For ducted heat pumps tested with constant-air-volume indoor blowers installed, conduct all tests that specify the Heating Minimum Air Volume Rate—(*i.e.,* the $H0_1$, $H1_1$, $H2_1$, and $H3_1$ Tests)—at an external static pressure that does not cause an automatic shutdown of the indoor blower while being as close to, but not less thanor air volume rate variation Q_{Var}, defined in section 3.1.4.1.1.b, greater than 10 percent, while being as close to, but not less than the target minimum external static pressure. Additional test steps as described in section 3.9.1(c) of this appendix are required if the measured external static pressure exceeds the target value by more than 0.03 inches of water.

c. For ducted two-capacity northern heat pumps that are tested with an indoor blower installed, use the appropriate approach of the above two cases.

d. For ducted two-capacity heat pumps that are tested without an indoor blower installed, use the Cooling Minimum Air Volume Rate as the Heating Minimum Air Volume Rate. For ducted two-capacity northern heat pumps that are tested without an indoor blower installed, use the Cooling Full-load Air Volume Rate as the Heating Minimum Air Volume Rate. For ducted two-capacity heating-only heat pumps that are tested without an indoor blower installed, the Heating Minimum Air Volume Rate is the higher of the rate specified by the manufacturer in the test setup instructions included with the unit or 75 percent of the Heating Full-load Air Volume Rate. During the laboratory tests on a coil-only system, obtain the Heating Minimum Air Volume Rate without regard to the pressure drop across the indoor coil assembly.

e. For non-ducted heat pumps, the Heating Minimum Air Volume Rate is the air volume rate that results during each test when the unit operates at an external static pressure of zero inches of water and at the indoor blower setting used at low compressor capacity (two-capacity system) or minimum compressor speed (variable-speed system). For units having a single-speed compressor and a variable-speed, variable-air-volume-rate indoor blower, use the lowest fan setting allowed for heating.

f. For ducted systems with multiple indoor blowers within a single indoor section, obtain the heating minimum air volume rate using the same ''on'' blowers as used for the cooling minimum air volume rate. For systems where individual blowers regulate the speed (as opposed to the cfm) of the indoor blower, use the first section 3.1.4.5 equation for each blower individually. Sum the individual blower air volume rates to obtain the heating minimum air volume rate for the system.

3.1.4.6 Heating Intermediate Air Volume Rate.

The manufacturer must specify the heating intermediate air volume rate and the instructions for setting fan speed or controls. Calculate target minimum external static pressure as described in section 3.1.4.2.

a. For ducted heat pumps tested with an indoor blower installed that is not a constant-air-volume indoor blower, adjust for external static pressure as described in section 3.1.4.2.a for cooling minimum air volume rate.

b. For ducted heat pumps tested with constant-air-volume indoor blowers installed, conduct the $H2_V$ Test at an external static pressure that does not cause an automatic shutdown of the indoor blower or air volume rate variation Q_{Var}, defined in section 3.1.4.1.1.b, greater than 10 percent, while being as close to, but not less than the target minimum external static pressure. Additional test steps as described in section 3.9.1(c) of this appendix are required if the measured external static pressure exceeds the target value by more than 0.03 inches of water.

c. For non-ducted heat pumps, the Heating Intermediate Air Volume Rate is the air volume rate that results when the heat pump operates at an external static pressure of zero inches of water and at the fan speed selected by the controls of the unit for the $H2_V$ Test conditions.

3.1.4.7 Heating Nominal Air Volume Rate.

The manufacturer must specify the heating nominal air volume rate and the instructions for setting fan speed or controls. Calculate target minimum external static pressure as described in section 3.1.4.2. Make adjustments as described in section 3.14.6 for heating intermediate air volume rate so that the target minimum external static pressure is met or exceeded.

3.1.5 Indoor test room requirement when the air surrounding the indoor unit is not supplied from the same source as the air entering the indoor unit.

If using a test set-up where air is ducted directly from the air reconditioning apparatus to the indoor coil inlet (see Figure 2, Loop Air-Enthalpy Test Method Arrangement, of ASHRAE Standard 37–2009), maintain the dry bulb temperature within the test room within ±5.0 °F of the applicable sections 3.2 and 3.6 dry bulb temperature test condition for the air entering the indoor unit. Dew point shall be within 2 °F of the required inlet conditions.

3.1.6 Air volume rate calculations.

For all steady-state tests and for Frost Accumulation ($H2$, $H2_1$, $H2_2$, $H2_V$) tests, calculate the air volume rate through the indoor coil as specified in sections 7.7.2.1 and 7.7.2.2 of ASHRAE Standard 37–2009. When using the Outdoor Air Enthalpy Method, follow sections 7.7.2.1 and 7.7.2.2 to calculate the air volume rate through the outdoor coil. To express air volume rates in terms of standard air, use:

Equation 3-1

$$\overline{\dot{V}_s} = \frac{\overline{\dot{V}_{mx}}}{0.075\,\frac{lbm_{da}}{ft^3} * v_n' * [1+W_n]} = \frac{\overline{\dot{V}_{mx}}}{0.075\,\frac{lbm_{da}}{ft^3} * v_n}$$

where,

$\overline{\dot{V}_s}$ = air volume rate of standard (dry) air, $(ft^3/min)_{da}$

$\overline{\dot{V}_{mx}}$ = air volume rate of the air-water vapor mixture, $(ft^3/min)_{mx}$

v_n' = specific volume of air-water vapor mixture at the nozzle, ft^3 per lbm of the air-water vapor mixture

W_n = humidity ratio at the nozzle, lbm of water vapor per lbm of dry air

0.075 = the density associated with standard (dry) air, (lbm/ft^3)

v_n = specific volume of the dry air portion of the mixture evaluated at the dry-bulb temperature, vapor content, and barometric pressure existing at the nozzle, ft^3 per lbm of dry air.

(Note: In the first printing of ASHRAE Standard 37-2009, the second IP equation for Q_{mi} should read, $Q_{mi} = 1097CA_n\sqrt{P_V v_n'}$

3.1.7 Test sequence.

Manufacturers may optionally operate the equipment under test for a ‘‘break-in’’ period, not to exceed 20 hours, prior to conducting the test method specified in this section. A manufacturer who elects to use this optional compressor break-in period in its certification testing should record this information (including the duration) in the test data underlying the certified ratings that are required to be maintained under 10 CFR 429.71. When testing a ducted unit (except if a heating-only heat pump), conduct the A or A_2 Test first to establish the Cooling Full-load Air Volume Rate. For ducted heat pumps where the Heating and Cooling Full-load Air Volume Rates are different, make the first heating mode test one that requires the Heating Full-load Air Volume Rate. For ducted heating-only heat pumps, conduct the H1 or $H1_2$ Test first to establish the Heating Full-load Air Volume Rate. When conducting an cyclic test, always conduct it immediately after the steady-state test that requires the same test conditions. For variable-speed systems, the first test using the Cooling Minimum Air Volume Rate should precede the E_V Test, and the first test using the Heating Minimum Air Volume Rate must precede the $H2_V$ Test. The test laboratory makes all other decisions on the test sequence.

3.1.8 Requirement for the air temperature distribution leaving the indoor coil.

For at least the first cooling mode test and the first heating mode test, monitor the temperature distribution of the air leaving the indoor coil using the grid of individual sensors described in sections 2.5 and 2.5.4. For the 30-minute data collection interval used to determine capacity, the maximum spread among the outlet dry bulb temperatures from any data sampling must not exceed 1.5 °F. Install the mixing devices described in section 2.5.4.2 to minimize the temperature spread.

3.1.9 Requirement for the air temperature distribution entering the outdoor coil.

Monitor the temperatures of the air entering the outdoor coil using the grid of temperature sensors described in section 2.11. For the 30-minute data collection interval used to determine capacity, the maximum difference between dry bulb temperatures measured at any of these locations must not exceed 1.5 °F.

3.1.10 Control of auxiliary resistive heating elements.

Except as noted, disable heat pump resistance elements used for heating indoor air at all times, including during defrost cycles and if they are normally regulated by a heat comfort controller. For heat pumps equipped with a heat comfort controller, enable the heat pump resistance elements only during the below-described, short test. For single-speed heat pumps covered under section 3.6.1, the short test follows the H1 or, if conducted, the H1C Test. For two-capacity heat pumps and heat pumps covered under section 3.6.2, the short test follows the $H1_2$ Test. Set the heat comfort controller to provide the maximum supply air temperature. With the heat pump operating and while maintaining the Heating Full-load Air Volume Rate, measure the temperature of the air leaving the indoor-side beginning 5 minutes after activating the heat comfort controller. Sample the outlet dry-bulb temperature at regular intervals that span 5 minutes or less. Collect data for 10 minutes, obtaining at least 3 samples. Calculate the average outlet temperature over the 10-minute interval, T_{CC}.

3.2 Cooling mode tests for different types of air conditioners and heat pumps.

3.2.1 Tests for a unit having a single-speed compressor, or a system comprised of independently circuited single-speed compressors, that is tested with a fixed-speed indoor blower installed, with a constant-air-volume-rate indoor blower installed, or with no indoor blower installed.

Conduct two steady-state wet coil tests, the A and B Tests. Use the two dry-coil tests, the steady-state C Test and the cyclic D Test, to determine the cooling mode cyclic degradation coefficient, C_D^c. If testing outdoor units of central air conditioners or heat pumps that are not sold with indoor units, assign C_D^c the default value of 0.2. Table 4 specifies test conditions for these four tests.

TABLE 4—COOLING MODE TEST CONDITIONS FOR UNITS HAVING A SINGLE-SPEED COMPRESSOR AND A FIXED-SPEED INDOOR BLOWER, A CONSTANT AIR VOLUME RATE INDOOR BLOWER, OR NO INDOOR BLOWER

Test description	Air entering indoor unit temperature (°F)		Air entering outdoor unit temperature (°F)		Cooling air volume rate
	Dry bulb	Wet bulb	Dry bulb	Wet bulb	
A Test—required (steady, wet coil)	80	67	95	[1] 75	Cooling full-load.[2]
B Test—required (steady, wet coil)	80	67	82	[1] 65	Cooling full-load.[2]
C Test—required (steady, dry coil)	80	([3])	82		Cooling full-load.[2]
D Test—required (cyclic, dry coil)	80	([3])	82		([4]).

[1] The specified test condition only applies if the unit rejects condensate to the outdoor coil.
[2] Defined in section 3.1.4.1.
[3] The entering air must have a low enough moisture content so no condensate forms on the indoor coil. (It is recommended that an indoor wet-bulb temperature of 57 °F or less be used.)
[4] Maintain the airflow nozzles static pressure difference or velocity pressure during the ON period at the same pressure difference or velocity pressure as measured during the C Test.

3.2.2 Tests for a unit having a single-speed compressor where the indoor section uses a single variable-speed variable-air-volume rate indoor blower or multiple blowers.

3.2.2.1 Indoor blower capacity modulation that correlates with the outdoor dry bulb temperature or systems with a single indoor coil but multiple blowers.

Conduct four steady-state wet coil tests: The A_2, A_1, B_2, and B_1 Tests. Use the two dry-coil tests, the steady-state C_1 Test and the cyclic D_1 Test, to determine the cooling mode cyclic degradation coefficient, C_D^c.

3.2.2.2 Indoor blower capacity modulation based on adjusting the sensible to total (S/T) cooling capacity ratio.

The testing requirements are the same as specified in section 3.2.1 and Table 4. Use a Cooling Full-load Air Volume Rate that represents a normal installation. If performed, conduct the steady-state C Test and the cyclic D Test with the unit operating in the same S/T capacity control mode as used for the B Test.

TABLE 5—COOLING MODE TEST CONDITIONS FOR UNITS WITH A SINGLE-SPEED COMPRESSOR THAT MEET THE SECTION 3.2.2.1 INDOOR UNIT REQUIREMENTS

Test description	Air entering indoor unit temperature (°F)		Air entering outdoor unit temperature (°F)		Cooling air volume rate
	Dry bulb	Wet bulb	Dry bulb	Wet bulb	
A_2 Test—required (steady, wet coil)	80	67	95	[1] 75	Cooling full-load.[2]
A_1 Test—required (steady, wet coil)	80	67	95	[1] 75	Cooling minimum.[3]
B_2 Test—required (steady, wet coil)	80	67	82	[1] 65	Cooling full-load.[2]
B_1 Test—required (steady, wet coil)	80	67	82	[1] 65	Cooling minimum.[3]
C_1 Test[4]—required (steady, dry coil)	80	([4])	82		Cooling minimum.[3]
D_1 Test[4]—required (cyclic, dry coil)	80	([4])	82	([5])	

[1] The specified test condition only applies if the unit rejects condensate to the outdoor coil.
[2] Defined in section 3.1.4.1.
[3] Defined in section 3.1.4.2.
[4] The entering air must have a low enough moisture content so no condensate forms on the indoor coil. (It is recommended that an indoor wet-bulb temperature of 57 °F or less be used.)
[5] Maintain the airflow nozzles static pressure difference or velocity pressure during the ON period at the same pressure difference or velocity pressure as measured during the C_1 Test.

3.2.3 Tests for a unit having a two-capacity compressor. (see section 1.2, Definitions)

a. Conduct four steady-state wet coil tests: The A_2, B_2, B_1, and F_1 Tests. Use the two dry-coil tests, the steady-state C_1 Test and the cyclic D_1 Test, to determine the cooling-mode cyclic-degradation coefficient, C_D^c. Table 6 specifies test conditions for these six tests.

b. For units having a variable speed indoor blower that is modulated to adjust the sensible to total (S/T) cooling capacity ratio, use Cooling Full-load and Cooling Minimum Air Volume Rates that represent a normal installation. Additionally, if conducting the dry-coil tests, operate the unit in the same S/T capacity control mode as used for the B_1 Test.

c. Test two-capacity, northern heat pumps (see section 1.2, Definitions) in the same way as a single speed heat pump with the unit operating exclusively at low compressor capacity (see section 3.2.1 and Table 4).

d. If a two-capacity air conditioner or heat pump locks out low-capacity operation at higher outdoor temperatures, then use the two dry-coil tests, the steady-state C_2 Test and the cyclic D_2 Test, to determine the cooling-mode cyclic-degradation coefficient that only applies to on/off cycling from high capacity, $C_D^c(k=2)$. The default $C_O^c(k=2)$ is the same value as determined or assigned for the low-capacity cyclic-degradation coefficient, C_D^c [or equivalently, $C_D^c(k=1)$].

TABLE 6—COOLING MODE TEST CONDITIONS FOR UNITS HAVING A TWO-CAPACITY COMPRESSOR

Test description	Air entering indoor unit temperature (°F)		Air entering outdoor unit temperature (°F)		Compressor capacity	Cooling air volume rate
	Dry bulb	Wet bulb	Dry bulb	Wet bulb		
A_2 Test—required (steady, wet coil)	80	67	95	[1] 75	High	Cooling Full-Load.[2]
B_2 Test—required (steady, wet coil)	80	67	82	[1] 65	High	Cooling Full-Load.[2]
B_1 Test—required (steady, wet coil)	80	67	82	[1] 65	Low	Cooling Minimum.[3]
C_2 Test—required (steady, dry-coil)	80	(4)	82	High	Cooling Full-Load.[2]	
D_2 Test—required (cyclic, dry-coil)	80	(4)	82	High	(5)	
C_1 Test—required (steady, dry-coil)	80	(4)	82	Low	Cooling Minimum.[3]	
D_1 Test—required (cyclic, dry-coil)	80	(4)	82	Low	(6)	
F_1 Test—required (steady, wet coil)	80	67	67	[1] 53.5	Low	Cooling Minimum.[3]

[1] The specified test condition only applies if the unit rejects condensate to the outdoor coil.
[2] Defined in section 3.1.4.1.
[3] Defined in section 3.1.4.2.
[4] The entering air must have a low enough moisture content so no condensate forms on the indoor coil. DOE recommends using an indoor air wet-bulb temperature of 57 °F or less.
[5] Maintain the airflow nozzle(s) static pressure difference or velocity pressure during the ON period at the same pressure or velocity as measured during the C_2 Test.
[6] Maintain the airflow nozzle(s) static pressure difference or velocity pressure during the ON period at the same pressure or velocity as measured during the C_1 Test.

3.2.4 Tests for a unit having a variable-speed compressor.

a. Conduct five steady-state wet coil tests: The A_2, E_V, B_2, B_1, and F_1 Tests. Use the two dry-coil tests, the steady-state G_1 Test and the cyclic I_1 Test, to determine the cooling mode cyclic degradation coefficient, C_D^c..-Table-7 specifies test conditions for these seven tests. Determine the intermediate compressor speed cited in Table 7 using:

$$\text{Intermediate speed} = \text{Minimum speed} + \frac{\text{Maximum speed} - \text{Minimum speed}}{3}$$

where a tolerance of plus 5 percent or the next higher inverter frequency step from that calculated is allowed.

b. For units that modulate the indoor blower speed to adjust the sensible to total (S/T) cooling capacity ratio, use Cooling Full-load, Cooling Intermediate, and Cooling Minimum Air Volume Rates that represent a normal installation. Additionally, if conducting the dry-coil tests, operate the unit in the same S/T capacity control mode as used for the F_1 Test.

c. For multiple-split air conditioners and heat pumps (except where noted), the following procedures supersede the above requirements: For all Table 7 tests specified for a minimum compressor speed, at least one indoor unit must be turned off. The manufacturer shall designate the particular indoor unit(s) that is turned off. The manufacturer must also specify the compressor speed used for the Table 7 E_V Test, a cooling-mode intermediate compressor speed that falls within ¼ and ¾ of the difference between the maximum and minimum cooling-mode speeds. The manufacturer should prescribe an intermediate speed that is expected to yield the highest EER for the given E_V Test conditions and bracketed compressor speed range. The manufacturer can designate that one or more indoor units are turned off for the E_V Test.

TABLE 7—COOLING MODE TEST CONDITION FOR UNITS HAVING A VARIABLE-SPEED COMPRESSOR

Test description	Air entering indoor unit temperature (°F)		Air entering outdoor unit temperature (°F)		Compressor speed	Cooling air volume rate
	Dry bulb	Wet bulb	Dry bulb	Wet bulb		
A_2 Test—required (steady, wet coil)	80	67	95	[1] 75	Maximum	Cooling Full-Load.[2]
B_2 Test—required (steady, wet coil)	80	67	82	[1] 65	Maximum	Cooling Full-Load.[2]
E_V Test—required (steady, wet coil)	80	67	87	[1] 69	Intermediate	Cooling Intermediate.[3]
B_1 Test—required (steady, wet coil)	80	67	82	[1] 65	Minimum	Cooling Minimum.[4]
F_1 Test—required (steady, wet coil)	80	67	67	[1] 53.5	Minimum	Cooling Minimum.[4]
G_1 Test [5]—required (steady, dry-coil)	80	(6)	67	Minimum	Cooling Minimum.[4].	
I_1 Test [5]—required (cyclic, dry-coil)	80	(6)	67	Minimum	(6).	

[1] The specified test condition only applies if the unit rejects condensate to the outdoor coil.
[2] Defined in section 3.1.4.1.
[3] Defined in section 3.1.4.3.
[4] Defined in section 3.1.4.2.
[5] The entering air must have a low enough moisture content so no condensate forms on the indoor coil. DOE recommends using an indoor air wet bulb temperature of 57 °F or less.
[6] Maintain the airflow nozzle(s) static pressure difference or velocity pressure during the ON period at the same pressure difference or velocity pressure as measured during the G_1 Test.

3.2.5 Cooling mode tests for northern heat pumps with triple-capacity compressors.

Test triple-capacity, northern heat pumps for the cooling mode in the same way as specified in section 3.2.3 for units having a two-capacity compressor.

3.2.6 Tests for an air conditioner or heat pump having a single indoor unit having multiple blowers and offering two stages of compressor modulation.

Conduct the cooling mode tests specified in section 3.2.3.

3.3 Test procedures for steady-state wet coil cooling mode tests (the A, A_2, A_1, B, B_2, B_1, E_V, and F_1 Tests).

a. For the pretest interval, operate the test room reconditioning apparatus and the unit to be tested until maintaining equilibrium conditions for at least 30 minutes at the specified section 3.2 test conditions. Use the exhaust fan of the airflow measuring apparatus and, if installed, the indoor blower of the test unit to obtain and then maintain the indoor air volume rate and/or external static pressure specified for the particular test. Continuously record (see section 1.2, Definitions):

(1) The dry-bulb temperature of the air entering the indoor coil,

(2) The water vapor content of the air entering the indoor coil,

(3) The dry-bulb temperature of the air entering the outdoor coil, and

(4) For the section 2.2.4 cases where its control is required, the water vapor content of the air entering the outdoor coil.

Refer to section 3.11 for additional requirements that depend on the selected secondary test method.

b. After satisfying the pretest equilibrium requirements, make the measurements specified in Table 3 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3) for the Indoor Air Enthalpy method and the user-selected secondary method. Make said Table 3 measurements at equal intervals that span 5 minutes or less. Continue data sampling until reaching a 30-minute period (*e.g.,* four consecutive 10-minute samples) where the test tolerances specified in Table 8 are satisfied. For those continuously recorded parameters, use the entire data set from the 30-minute interval to evaluate Table 8 compliance. Determine the average electrical power consumption of the air conditioner or heat pump over the same 30-minute interval.

c. Calculate indoor-side total cooling capacity and sensible cooling capacity as specified in sections 7.3.3.1 and 7.3.3.3 of ASHRAE Standard 37–2009. Do not adjust the parameters used in calculating capacity for the permitted variations in test conditions. Evaluate air enthalpies based on the measured barometric pressure. Use the values of the specific heat of air given in section 7.3.3.1 for calculation of the sensible cooling capacities. Assign the average total space cooling capacity, average sensible cooling capacity, and electrical power consumption over the 30-minute data collection interval to the variables $\dot{Q}ck(T)$, $\dot{Q}sck(T)$ and $\dot{E}ck(T)$, respectively. For these three variables, replace the "T" with the nominal outdoor temperature at which the test was conducted. The superscript k is used only when testing multi-capacity units. Use the superscript k=2 to denote a test with the unit operating at high capacity or maximum speed, k=1 to denote low capacity or minimum speed, and k=v to denote the intermediate speed.

d. For units tested without an indoor blower installed, decrease $\dot{Q}_c^k(T)$ by

$$\frac{1505\ Btu/h}{1000\ scfm} * \bar{\dot{V}}_s$$

and increase $\dot{E}_c^k(T)$ by,

$$\frac{441\ W}{1000\ scfm} * \bar{\dot{V}}_s$$

where $\bar{\dot{V}}_s$ is the average measured indoor air volume rate expressed in units of cubic feet per minute of standard air (scfm).

TABLE 8—TEST OPERATING AND TEST CONDITION TOLERANCES FOR SECTION 3.3 STEADY-STATE WET COIL COOLING MODE TESTS AND SECTION 3.4 DRY COIL COOLING MODE TESTS

	Test operating tolerance [1]	Test condition tolerance [1]
Indoor dry-bulb, °F:		
Entering temperature	2.0	0.5
Leaving temperature	2.0	
Indoor wet-bulb, °F:		
Entering temperature	1.0	[2] 0.3
Leaving temperature	[2] 1.0	
Outdoor dry-bulb, °F:		
Entering temperature	2.0	0.5
Leaving temperature	[3] 2.0	
Outdoor wet-bulb, °F:		
Entering temperature	1.0	[4] 0.3
Leaving temperature	[3] 1.0	
External resistance to airflow, inches of water	0.12	[5] 0.02
Electrical voltage, % of rdg.	2.0	1.5
Nozzle pressure drop, % of rdg.	8.0	

[1] See section 1.2, Definitions.
[2] Only applies during wet coil tests; does not apply during steady-state, dry coil cooling mode tests.
[3] Only applies when using the Outdoor Air Enthalpy Method.
[4] Only applies during wet coil cooling mode tests where the unit rejects condensate to the outdoor coil.
[5] Only applies when testing non-ducted units.

e. For air conditioners and heat pumps having a constant-air-volume-rate indoor blower, the five additional steps listed below are required if the average of the measured external static pressures exceeds the applicable sections 3.1.4 minimum (or target) external static pressure (ΔP_{min}) by 0.03 inches of water or more.

1. Measure the average power consumption of the indoor blower motor ($\dot{E}_{fan,1}$) and record the corresponding external static pressure (ΔP_1) during or immediately following the 30-

minute interval used for determining capacity.

2. After completing the 30-minute interval and while maintaining the same test conditions, adjust the exhaust fan of the airflow measuring apparatus until the external static pressure increases to approximately $\Delta P_1 + (\Delta P_1 - \Delta P_{min})$.

3. After re-establishing steady readings of the fan motor power and external static pressure, determine average values for the indoor blower power ($\dot{E}_{fan,2}$) and the external static pressure (ΔP_2) by making measurements over a 5-minute interval.

4. Approximate the average power consumption of the indoor blower motor at ΔP_{min} using linear extrapolation:

$$\dot{E}_{fan,\min} = \frac{\dot{E}_{fan,2} - \dot{E}_{fan,1}}{\Delta P_2 - \Delta P_1}(\Delta P_{\min} - \Delta P_1) + \dot{E}_{fan,1}$$

5. Increase the total space cooling capacity, $\dot{Q}_c^k(T)$, by the quantity $(\dot{E}_{fan,1} - \dot{E}_{fan,min})$, when expressed on a Btu/h basis. Decrease the total electrical power, $\dot{E}_c^k(T)$, by the same fan power difference, now expressed in watts.

3.4 Test procedures for the steady-state dry-coil cooling-mode tests (the C, C_1, C_2, and G_1 Tests).

a. Except for the modifications noted in this section, conduct the steady-state dry coil cooling mode tests as specified in section 3.3 for wet coil tests. Prior to recording data during the steady-state dry coil test, operate the unit at least one hour after achieving dry coil conditions. Drain the drain pan and plug the drain opening. Thereafter, the drain pan should remain completely dry.

b. Denote the resulting total space cooling capacity and electrical power derived from the test as $\dot{Q}_{ss,dry}$ and $\dot{E}_{ss,dry}$. With regard to a section 3.3 deviation, do not adjust $\dot{Q}_{ss,dry}$ for duct losses (*i.e.,* do not apply section 7.3.3.3 of ASHRAE Standard 37–2009). In preparing for the section 3.5 cyclic tests, record the average indoor-side air volume rate, $\bar{V}$, specific heat of the air, Cp,a (expressed on dry air basis), specific volume of the air at the nozzles, v'_n, humidity ratio at the nozzles, W_n, and either pressure difference or velocity pressure for the flow nozzles. For units having a variable-speed indoor fan (that provides either a constant or variable air volume rate) that will or may be tested during the cyclic dry coil cooling mode test with the indoor fan turned off (see section 3.5), include the electrical power used by the indoor fan motor among the recorded parameters from the 30-minute test.

c. If the temperature sensors used to provide the primary measurement of the indoor-side dry bulb temperature difference during the steady-state dry-coil test and the subsequent cyclic dry- coil test are different, include measurements of the latter sensors among the regularly sampled data. Beginning at the start of the 30-minute data collection period, measure and compute the indoor-side air dry-bulb temperature difference using both sets of instrumentation, ΔT (Set SS) and ΔT (Set CYC), for each equally spaced data sample. If using a consistent data sampling rate that is less than 1 minute, calculate and record minutely averages for the two temperature differences. If using a consistent sampling rate of one minute or more, calculate and record the two temperature differences from each data sample. After having recorded the seventh (i=7) set of temperature differences, calculate the following ratio using the first seven sets of values:

$$F_{CD} = \frac{1}{7}\sum_{i-6}^{i}\frac{\Delta T(Set\ SS)}{\Delta T(Set\ CYC)}$$

Each time a subsequent set of temperature differences is recorded (if sampling more frequently than every 5 minutes), calculate F_{CD} using the most recent seven sets of values. Continue these calculations until the 30-minute period is completed or until a value for F_{CD} is calculated that falls outside the allowable range of 0.94–1.06. If the latter occurs, immediately suspend the test and identify the cause for the disparity in the two temperature difference measurements. Recalibration of one or both sets of instrumentation may be required. If all the values for F_{CD} are within the allowable range, save the final value of the ratio from the 30-minute test as F_{CD}*. If the temperature sensors used to provide the primary measurement of the indoor-side dry bulb temperature difference during the steady-state dry- coil test and the subsequent cyclic dry-coil test are the same, set F_{CD}*= 1.

3.5 Test procedures for the cyclic dry-coil cooling-mode tests (the D, D_1, D_2, and I_1 Tests).

a. After completing the steady-state dry-coil test, remove the Outdoor Air Enthalpy method test apparatus, if connected, and begin manual OFF/ON cycling of the unit's compressor. The test set-up should otherwise be identical to the set-up used during the steady-state dry coil test. When testing heat pumps, leave the reversing valve during the compressor OFF cycles in the same position as used for the compressor ON cycles, unless automatically changed by the controls of the unit. For units having a variable-speed indoor blower, the manufacturer has the option of electing at the outset whether to conduct the cyclic test with the indoor blower enabled or disabled. Always revert to testing with the indoor blower disabled if cyclic testing with the fan enabled is unsuccessful.

b. For units having a single-speed or two-capacity compressor, cycle the compressor OFF for 24 minutes and then ON for 6 minutes ($\Delta\tau_{cyc,dry}$ = 0.5 hours). For units having a variable-speed compressor, cycle the compressor OFF for 48 minutes and then ON for 12 minutes ($\Delta\tau_{cyc,dry}$ = 1.0 hours). Repeat the OFF/ON compressor cycling pattern until the test is completed. Allow the controls of the unit to regulate cycling of the outdoor fan. If an upturned duct is used, measure the dry-bulb temperature at the inlet of the device at least once every minute and ensure that its test operating tolerance is within 1.0 °F for each compressor OFF period.

c. Sections 3.5.1 and 3.5.2 specify airflow requirements through the indoor coil of ducted and non-ducted systems, respectively. In all cases, use the exhaust fan of the airflow measuring apparatus (covered under section 2.6) along with the indoor blower of the unit, if installed and operating, to approximate a step response in the indoor coil airflow. Regulate the exhaust fan to quickly obtain and then maintain the flow nozzle static pressure difference or velocity pressure at the same value as was measured during the steady-state dry coil test. The pressure difference or velocity pressure should be within 2 percent of the value from the steady-state dry coil test within 15 seconds after airflow initiation. For units having a variable-speed indoor blower that ramps when cycling on and/or off, use the exhaust fan of the airflow measuring apparatus to impose a step response that begins at the initiation of ramp up and ends at the termination of ramp down.

d. For units having a variable-speed indoor blower, conduct the cyclic dry coil test using the pull-thru approach described below if any of the following occur when testing with the fan operating:

(1) The test unit automatically cycles off;

(2) Its blower motor reverses; or

(3) The unit operates for more than 30 seconds at an external static pressure that is 0.1 inches of water or more higher than the value measured during the prior steady-state test.

For the pull-thru approach, disable the indoor blower and use the exhaust fan of the airflow measuring apparatus to generate the specified flow nozzles static pressure difference or velocity pressure. If the exhaust fan cannot deliver the required pressure difference because of resistance created by the unpowered blower, temporarily remove the blower.

e. Conduct a minimum of six complete compressor OFF/ON cycles for a unit with a single-speed or two-speed compressor, and a minimum of five complete compressor OFF/ON cycles for a unit with a variable speed compressor. The first three cycles for a unit with a single-speed compressor or two-speed compressor and the first two cycles for a unit with a unit with a variable speed compressor are the warm-up period—the later cycles are called the active cycles. Calculate the degradation coefficient C_D for each complete active cycle if the test tolerances given in Table 9 are satisfied. If the average C_D for the first three active cycles is within 0.02 of the average C_D for the first two active cycles, use the average C_D of the three active cycles as the final result. If these averages differ by more than 0.02, continue the test to get C_D for the fourth cycle. If the average C_D of the last three cycles is lower than or no more than 0.02 greater than the average C_D of the first three cycles, use the average C_D of all four active cycles as the final result. Otherwise, continue the test with a fifth cycle. If the average C_D of the last three cycles is 0.02 higher than the average for the previous three cycles, use the default C_D, otherwise use the average C_D of all five active cycles. If the test tolerances given in Table 9 are not satisfied, use default C_D value. The default C_D value for cooling is 0.2.

f. With regard to the Table 9 parameters, continuously record the dry-bulb temperature of the air entering the indoor and outdoor coils during periods when air flows through the respective coils. Sample the water vapor content of the indoor coil inlet air at least every 2 minutes during periods when air flows through the coil. Record external static pressure and the air volume rate indicator (either nozzle pressure difference or velocity pressure) at least every minute during the interval that air flows through the indoor coil. (These regular measurements of the airflow rate indicator are in addition to the required measurement at 15 seconds after flow initiation.) Sample the electrical voltage at least every 2 minutes beginning 30 seconds after compressor start-up. Continue until the compressor, the outdoor fan, and the indoor blower (if it is installed and operating) cycle off.

g. For ducted units, continuously record the dry-bulb temperature of the air entering (as noted above) and leaving the indoor coil. Or if using a thermopile, continuously record the difference between these two temperatures during the interval that air flows through the indoor coil. For non-ducted units, make the same dry-bulb temperature measurements beginning when the compressor cycles on and ending when indoor coil airflow ceases.

h. Integrate the electrical power over complete cycles of length $\Delta\tau_{cyc,dry}$. For ducted units tested with an indoor blower installed and operating, integrate electrical power from indoor blower OFF to indoor blower OFF. For all other ducted units and for non-ducted units, integrate electrical power from compressor OFF to compressor OFF. (Some cyclic tests will use the same data collection intervals to determine the electrical energy and the total space cooling. For other units, terminate data collection used to determine the electrical energy before terminating data collection used to determine total space cooling.)

TABLE 9—TEST OPERATING AND TEST CONDITION TOLERANCES FOR CYCLIC DRY COIL COOLING MODE TESTS

	Test operating tolerance [1]	Test condition tolerance [1]
Indoor entering dry-bulb temperature,[2] °F	2.0	0.5
Indoor entering wet-bulb temperature, °F	....	([3])
Outdoor entering dry-bulb temperature,[2] °F	2.0	0.5
External resistance to airflow,[2] inches of water	0.12	....
Airflow nozzle pressure difference or velocity pressure,[2] % of reading	8.0	[4] 2.0
Electrical voltage,[5] % of rdg	2.0	1.5

[1] See section 1.2, Definitions.
[2] Applies during the interval that air flows through the indoor (outdoor) coil except for the first 30 seconds after flow initiation. For units having a variable-speed indoor blower that ramps, the tolerances listed for the external resistance to airflow apply from 30 seconds after achieving full speed until ramp down begins.
[3] Shall at no time exceed a wet-bulb temperature that results in condensate forming on the indoor coil.
[4] The test condition shall be the average nozzle pressure difference or velocity pressure measured during the steady-state dry coil test.
[5] Applies during the interval when at least one of the following—the compressor, the outdoor fan, or, if applicable, the indoor blower—are operating except for the first 30 seconds after compressor start-up.

i. If the Table 9 tolerances are satisfied over the complete cycle, record the measured electrical energy consumption as $e_{cyc,dry}$ and express it in units of watt-hours. Calculate the total space cooling delivered, $q_{cyc,dry}$, in units of Btu using,

$$q_{cyc,dry} = \frac{60*\overline{\dot{V}}*C_{p,a}*\Gamma}{[v_n'*(1+W_n)]} = \frac{60*\overline{\dot{V}}*C_{p,a}*\Gamma}{v_n} \quad \text{and} \quad \Gamma = F_{CD}^* \int_{\tau_1}^{\tau_2} [T_{a1}(\tau) - T_{a2}(\tau)]\delta\tau,\ hr * °\text{F}$$

where $\overline{\dot{V}}$, $C_{p,a}$, v_n' (or v_n), W_n, and F_{CD}^* are the values recorded during the section 3.4 dry coil steady-state test and

$T_{a1}(\tau)$ = dry bulb temperature of the air entering the indoor coil at time τ, °F.

$T_{a2}(\tau)$ = dry bulb temperature of the air leaving the indoor coil at time τ, °F.

τ_1 = for ducted units, the elapsed time when airflow is initiated through the indoor coil; for non-ducted units, the elapsed time when the compressor is cycled on, hr.

τ_2 = the elapsed time when indoor coil airflow ceases, hr.

3.5.1 Procedures when testing ducted systems.

The automatic controls that are normally installed with the test unit must govern the OFF/ON cycling of the air moving equipment on the indoor side (exhaust fan of the airflow measuring apparatus and, if installed, the indoor blower of the test unit). For example, for ducted units tested without an indoor blower installed but rated based on using a fan time delay relay, control the indoor coil airflow according to the rated ON and/or OFF delays provided by the relay. For ducted units having a variable-speed indoor blower that has been disabled (and possibly removed), start and stop the indoor airflow at the same instances as if the fan were enabled. For all other ducted units tested without an indoor blower installed, cycle the indoor coil airflow in unison with the cycling of the compressor. If air damper boxes are used, close them on the inlet and outlet side during the OFF period. Airflow through the indoor coil should stop within 3 seconds after the automatic controls of the test unit (act to) de-energize the indoor blower. For ducted units tested without an indoor blower installed (excluding the special case where a variable-speed fan is temporarily removed), increase $e_{cyc,dry}$ by the quantity,

Equation 3.5–2 $(441 W \div 1000 scfm) * \bar{\dot{V}} * [\tau_2 - \tau_1]$

and decrease $q_{cyc,dry}$ by,

Equation 3.5–3 $(1505\ Btu/h \div 1000 scfm) * \bar{\dot{V}} * [\tau_2 - \tau_1]$

where $\bar{\dot{V}}_s$ is the average indoor air volume rate from the section 3.4 dry coil steady-state test and is expressed in units of cubic feet per minute of standard air (scfm). For units having a variable-speed indoor blower that is disabled during the cyclic test, increase $e_{cyc,dry}$ and decrease $q_{cyc,dry}$ based on:

a. The product of $[\tau_2 - \tau_1]$ and the indoor blower power measured during or following the dry coil steady-state test; or,

b. The following algorithm if the indoor blower ramps its speed when cycling.

1. Measure the electrical power consumed by the variable-speed indoor blower at a minimum of three operating conditions: At the speed/air volume rate/external static pressure that was measured during the steady-state test, at operating conditions associated with the midpoint of the ramp-up interval, and at conditions associated with the midpoint of the ramp-down interval. For these measurements, the tolerances on the airflow volume or the external static pressure are the same as required for the section 3.4 steady-state test.

2. For each case, determine the fan power from measurements made over a minimum of 5 minutes.

3. Approximate the electrical energy consumption of the indoor blower if it had operated during the cyclic test using all three power measurements. Assume a linear profile during the ramp intervals. The manufacturer must provide the durations of the ramp-up and ramp-down intervals. If the test setup instructions included with the unit by the manufacturer specifies a ramp interval that exceeds 45 seconds, use a 45-second ramp interval nonetheless when estimating the fan energy.

3.5.2 Procedures when testing non-ducted systems.

Do not use airflow prevention devices when conducting cyclic tests on non-ducted units. Until the last OFF/ON compressor cycle, airflow through the indoor coil must cycle off and on in unison with the compressor. For the last OFF/ON compressor cycle—the one used to determine $e_{cyc,dry}$ and $q_{cyc,dry}$—use the exhaust fan of the airflow measuring apparatus and the indoor blower of the test unit to have indoor airflow start 3 minutes prior to compressor cut-on and end three minutes after compressor cutoff. Subtract the electrical energy used by the indoor blower during the 3 minutes prior to compressor cut-on from the integrated electrical energy, $e_{cyc,dry}$. Add the electrical energy used by the indoor blower during the 3 minutes after compressor cutoff to the integrated cooling capacity, $q_{cyc,dry}$. For the case where the non-ducted unit uses a variable-speed indoor blower which is disabled during the cyclic test, correct $e_{cyc,dry}$ and $q_{cyc,dry}$ using the same approach as prescribed in section 3.5.1 for ducted units having a disabled variable-speed indoor blower.

3.5.3 Cooling-mode cyclic-degradation coefficient calculation.

Use the two dry-coil tests to determine the cooling-mode cyclic-degradation coefficient, C_D^c. Append ''(k=2)'' to the coefficient if it corresponds to a two-capacity unit cycling at high capacity. Evaluate C_D^c using the above results and those from the section 3.4 dry-coil steady-state test.

$$C_D^c = \frac{1 - \frac{EER_{cyc,dry}}{EER_{ss,dry}}}{1 - CLF}$$

where,

$$EER_{cyc,dry} = \frac{q_{cyc,dry}}{e_{cyc,dry}}$$

the average energy efficiency ratio during the cyclic dry coil cooling mode test, Btu/W·h

$$EER_{ss,dry} = \frac{\dot{Q}_{ss,dry}}{\dot{E}_{ss,dry}}$$

the average energy efficiency ratio during the steady-state dry coil cooling mode test, Btu/W·h

$$CLF = \frac{q_{cyc,dry}}{Q_{ss,dry} * \Delta\tau_{cyc,dry}}$$

Round the calculated value for C_D^c to the nearest 0.01. If C_D^c is negative, then set it equal to zero.

3.6 Heating mode tests for different types of heat pumps, including heating-only heat pumps.

3.6.1 Tests for a heat pump having a single-speed compressor that is tested with a fixed speed indoor blower installed, with a constant-air-volume-rate indoor blower installed, or with no indoor blower installed.

Conduct the High Temperature Cyclic (H1C) Test to determine the heating mode cyclic-degradation coefficient, C_D^h. Test conditions for the four tests are specified in Table 10.

TABLE 10—HEATING MODE TEST CONDITIONS FOR UNITS HAVING A SINGLE-SPEED COMPRESSOR AND A FIXED-SPEED INDOOR BLOWER, A CONSTANT AIR VOLUME RATE INDOOR BLOWER, OR NO INDOOR BLOWER

Test description	Air entering indoor unit temperature (°F)		Air entering outdoor unit temperature (°F)		Heating air volume rate
	Dry bulb	Wet bulb	Dry bulb	Wet bulb	
H1 Test (required, steady)	70	$60^{(max)}$	47	43	Heating Full-load.[1]
H1C Test (required, cyclic)	70	$60^{(max)}$	47	43	([2]).
H2 Test (required)	70	$60^{(max)}$	35	33	Heating Full-load.[1]
H3 Test (required, steady)	70	$60^{(max)}$	17	15	Heating Full-load.[1]

[1] Defined in section 3.1.4.4.
[2] Maintain the airflow nozzles static pressure difference or velocity pressure during the ON period at the same pressure difference or velocity pressure as measured during the H1 Test.

3.6.2 Tests for a heat pump having a single-speed compressor and a single indoor unit having either (1) a variable speed, variable-air-rate indoor blower whose capacity modulation correlates with outdoor dry bulb temperature or (2) multiple blowers. Conduct five tests: Two High Temperature Tests ($H1_2$ and $H1_1$), one Frost Accumulation Test ($H2_2$), and two Low Temperature Tests ($H3_2$ and $H3_1$). Conducting an additional Frost Accumulation Test ($H2_1$) is optional. Conduct the High Temperature Cyclic ($H1C_1$) Test to determine the heating mode cyclic-degradation coefficient, C_D^h. Test conditions for the seven tests are specified in Table 11. If the optional $H2_1$ Test is not performed, use the following equations to approximate the capacity and electrical power of the heat pump at the $H2_1$ test conditions:

$$\dot{Q}_h^{k=1}(35) = QR_h^{k=2}(35) * \left\{\dot{Q}_h^{k=1}(17) + 0.6 * \left[\dot{Q}_h^{k=1}(47) - \dot{Q}_h^{k=1}(17)\right]\right\}$$

$$\dot{E}_h^{k=1}(35) = PR_h^{k=2}(35) * \left\{\dot{E}_h^{k=1}(17) + 0.6 * \left[\dot{E}_h^{k=1}(47) - \dot{E}_h^{k=1}(17)\right]\right\}$$

where,

$$\dot{Q}R_h^{k=2}(35) = \frac{\dot{Q}_h^{k=2}(35)}{\dot{Q}^{k=2}(17) + 0.6 * [\dot{Q}_h^{k=2}(47) - \dot{Q}_h^{k=2}(17)]}$$

$$PR_h^{k=2}(35) = \frac{\dot{E}_h^{k=2}(35)}{\dot{E}_h^{k=2}(17) + 0.6 * \left[\dot{E}_h^{k=2}(47) - \dot{E}_h^{k=2}(17)\right]}$$

The quantities $\dot{Q}_h^{k=2}(47)$, $\dot{E}_h^{k=2}(47)$, $\dot{Q}_h^{k=1}(47)$, and $\dot{E}_h^{k=1}(47)$ are determined from the $H1_2$ and $H1_1$ Tests and evaluated as specified in section 3.7; the quantities $\dot{Q}_h^{k=2}(35)$ and $\dot{E}_h^{k=2}(35)$ are determined from the $H2_2$ Test and evaluated as specified in section 3.9; and the quantities $\dot{Q}_h^{k=2}(17)$, $\dot{E}_h^{k=2}(17)$, $\dot{Q}_h^{k=1}(17)$, and $\dot{E}_h^{k=1}(17)$, are determined from the $H3_2$ and $H3_1$ Tests and evaluated as specified in section 3.10.

TABLE 11—HEATING MODE TEST CONDITIONS FOR UNITS WITH A SINGLE-SPEED COMPRESSOR THAT MEET THE SECTION 3.6.2 INDOOR UNIT REQUIREMENTS

Test description	Air entering indoor unit temperature (°F)		Air entering outdoor unit temperature (°F)		Heating air volume rate
	Dry bulb	Wet bulb	Dry bulb	Wet bulb	
$H1_2$ Test (required, steady)	70	$60^{(max)}$	47	43	Heating Full-load.[1]
$H1_1$ Test (required, steady)	70	$60^{(max)}$	47	43	Heating Minimum.[2]
$H1C_1$ Test (required, cyclic)	70	$60^{(max)}$	47	43	([3]).
$H2_2$ Test (required)	70	$60^{(max)}$	35	33	Heating Full-load.[1]
$H2_1$ Test (optional)	70	$60^{(max)}$	35	33	Heating Minimum.[2]
$H3_2$ Test (required, steady)	70	$60^{(max)}$	17	15	Heating Full-load.[1]
$H3_1$ Test (required, steady)	70	$60^{(max)}$	17	15	Heating Minimum.[2]

[1] Defined in section 3.1.4.4.
[2] Defined in section 3.1.4.5.
[3] Maintain the airflow nozzles static pressure difference or velocity pressure during the ON period at the same pressure difference or velocity pressure as measured during the $H1_1$ Test.

3.6.3 Tests for a heat pump having a two-capacity compressor (see section 1.2, Definitions), including two-capacity, northern heat pumps (see section 1.2, Definitions).

a. Conduct one Maximum Temperature Test ($H0_1$), two High Temperature Tests ($H1_2$ and $H1_1$), one Frost Accumulation Test ($H2_2$), and one Low Temperature Test ($H3_2$). Conduct an additional Frost Accumulation Test ($H2_1$) and Low Temperature Test ($H3_1$) if both of the following conditions exist:

1. Knowledge of the heat pump's capacity and electrical power at low compressor capacity for outdoor temperatures of 37 °F and less is needed to complete the section 4.2.3 seasonal performance calculations; and

2. The heat pump's controls allow low-capacity operation at outdoor temperatures of 37 °F and less.

If the above two conditions are met, an alternative to conducting the $H2_1$ Frost Accumulation is to use the following equations to approximate the capacity and electrical power:

$$\dot{Q}_h^{k=2}(35) = 0.90 * \left\{\dot{Q}_h^{k=2}(17) + 0.6 * \left[\dot{Q}_h^{k=2}(47) - \dot{Q}_h^{k=2}(17)\right]\right\}$$

$$\dot{E}_h^{k=2}(35) = 0.985 * \left\{\dot{E}_h^{k=2}(17) + 0.6 * \left[\dot{E}_h^{k=2}(47) - \dot{E}_h^{k=2}(17)\right]\right\}$$

Determine the quantities $\dot{Q}_h^{k=1}(47)$ and $\dot{E}_h^{k=1}(47)$ from the $H1_1$ Test and evaluate them according to Section 3.7. Determine the quantities $\dot{Q}_h^{k=1}(17)$ and $\dot{E}_h^{k=1}(17)$ from the $H3_1$ Test and evaluate them according to Section 3.10.

b. Conduct the High Temperature Cyclic Test ($H1C_1$) to determine the heating mode cyclic-degradation coefficient, C_D^h. If a two-capacity heat pump locks out low capacity operation at lower outdoor temperatures, conduct the High Temperature Cyclic Test ($H1C_2$) to determine the high-capacity heating mode cyclic-degradation coefficient, C_D^h (k=2). Table 12 specifies test conditions for these nine tests.

TABLE 12—HEATING MODE TEST CONDITIONS FOR UNITS HAVING A TWO-CAPACITY COMPRESSOR

Test description	Air entering indoor unit temperature (°F)		Air entering outdoor unit temperature (°F)		Compressor capacity	Heating air volume rate
	Dry bulb	Wet bulb	Dry bulb	Wet bulb		
$H0_1$ Test (required, steady)	70	60 (max)	62	56.5	Low	Heating Minimum.[1]
$H1_2$ Test (required, steady)	70	60 (max)	47	43	High	Heating Full-Load.[2]
$H1C_2$ Test (required,[7] cyclic)	70	60 (max)	47	43	High	([3])
$H1_1$ Test (required)	70	60 (max)	47	43	Low	Heating Minimum.[1]
$H1C_1$ Test (required, cyclic)	70	60 (max)	47	43	Low	([4])
$H2_2$ Test (required)	70	60 (max)	35	33	High	Heating Full-Load.[2]
$H2_1$ Test[5 6] (required)	70	60 (max)	35	33	Low	Heating Minimum.[1]
$H3_2$ Test (required, steady)	70	60 (max)	17	15	High	Heating Full-Load.[2]
$H3_1$ Test[5] (required, steady)	70	60 (max)	17	15	Low	Heating Minimum.[1]

[1] Defined in section 3.1.4.5.
[2] Defined in section 3.1.4.4.
[3] Maintain the airflow nozzle(s) static pressure difference or velocity pressure during the ON period at the same pressure or velocity as measured during the *$H1_2$* Test.
[4] Maintain the airflow nozzle(s) static pressure difference or velocity pressure during the ON period at the same pressure or velocity as measured during the *$H1_1$* Test.
[5] Required only if the heat pump's performance when operating at low compressor capacity and outdoor temperatures less than 37 °F is needed to complete the section 4.2.3 *HSPF* calculations.
[6] If table note #5 applies, the section 3.6.3 equations for $\dot{Q}_h^{k=1}(35)$ and $\dot{E}_h^{k=1}(17)$ may be used in lieu of conducting the $H2_1$ Test.
[7] Required only if the heat pump locks out low capacity operation at lower outdoor temperatures.

3.6.4 Tests for a heat pump having a variable-speed compressor.

a. (1) Conduct one Maximum Temperature Test ($H0_1$), two High Temperature Tests ($H1_2$ and $H1_1$), one Frost Accumulation Test ($H2_V$), and one Low Temperature Test ($H3_2$). Conducting one or all of the following tests is optional: An additional High Temperature Test ($H1_N$), an additional Frost Accumulation Test ($H2_2$), and an additional Low Temperature Test ($H4_2$). Conduct the High Temperature Cyclic ($H1C_1$) Test to determine the heating mode cyclic-degradation coefficient, C_D^h. (2) The optional low ambient temperature test ($H4_2$) may be conducted in place of $H1_2$ to allow representation of heating performance below 17 °F ambient temperature using the results of $H4_2$ and $H3_2$ rather than the results of $H3_2$ and $H1_2$. This option may not be used for units which have a cutoff temperature preventing compressor operation below 12 °F. If $H4_2$ is conducted, it is optional to conduct the $H1_2$ test for heating capacity rating purposes—$H1_N$ can be conducted for heating capacity rating purposes. If $H1_2$ is not conducted, $H2_2$ must be conducted.

Test conditions for the nine tests are specified in Table 13. Determine the intermediate compressor speed cited in Table 13 using the heating mode maximum and minimum compressors speeds and:

$$\text{Intermediate speed} = \text{Minimum speed} + \frac{\text{Maximum speed} - \text{Minimum speed}}{3}$$

Where a tolerance of plus 5 percent or the next higher inverter frequency step from that calculated is allowed. If the $H2_2$Test is not done, use the following equations to approximate the capacity and electrical power at the $H2_2$ test conditions:

$$\dot{Q}_h^{k=2}(35) = 0.90 * \left\{\dot{Q}_h^{k=2}(17) + 0.6 * \left[\dot{Q}_h^{k=2}(47) - \dot{Q}_h^{k=2}(17)\right]\right\}$$

$$\dot{E}_h^{k=2}(35) = 0.985 * \left\{\dot{E}_h^{k=2}(17) + 0.6 * \left[\dot{E}_h^{k=2}(47) - \dot{E}_h^{k=2}(17)\right]\right\}$$

b. Determine the quantities $\dot{Q}_h^{k=2}(47)$ and from $\dot{E}_h^{k=2}(47)$ from the $H1_2$ Test and evaluate them according to section 3.7. Determine the quantities $\dot{Q}_h^{k=2}(17)$ and $\dot{E}_h^{k=2}(17)$ from the $H3_2$ Test and evaluate them according to section 3.10. Determine the quantities $\dot{Q}_h^{k=2}(T_L)$ and $\dot{E}_h^{k=2}(T_L)$ from the $H4_2$ Test and evaluate them according to section 3.10. For heat pumps where the heating mode maximum compressor speed exceeds its cooling mode maximum compressor speed, conduct the $H1_N$ Test if the manufacturer requests it. If the $H1_N$ Test is done, operate the heat pump's compressor at the same speed as the speed used for the cooling mode A_2 Test.

TABLE 13—HEATING MODE TEST CONDITIONS FOR UNITS HAVING A VARIABLE-SPEED COMPRESSOR

Test description	Air entering indoor unit temperature (°F)		Air entering outdoor unit temperature (°F)		Compressor speed	Heating air volume rate
	Dry bulb	Wet bulb	Dry bulb	Wet bulb		
$H0_1$ Test (required, steady)	70	60 (max)	62	56.5	Minimum	Heating Minimum.[1]
$H1C_1$ Test (required, cyclic)	70	60 (max)	47	43	Minimum	([2]).
$H1_2$ Test (required, steady)	70	60 (max)	47	43	Maximum	Heating Full-Load.[3]
$H1_1$ Test (required, steady)	70	60 (max)	47	43	Minimum	Heating Minimum.[1]
$H1_N$ Test (optional, steady)	70	60 (max)	47	43	Cooling Mode Maximum.	Heating Nominal.[4]
$H2_2$ Test (optional)	70	60 (max)	35	33	Maximum	Heating Full-Load.[3]
$H2_V$ Test (required)	70	60 (max)	35	33	Intermediate	Heating Intermediate.[5]
$H3_2$ Test (required, steady)	70	60 (max)	17	15	Maximum	Heating Full-Load.[3]
$H4_2$ Test (optional, steady)[6]	70	60 (max)	[7] 2	[7] 1	Maximum[8]	Heating Full-Load.[3]

[1] Defined in section 3.1.4.5.
[2] Maintain the airflow nozzle(s) static pressure difference or velocity pressure during an ON period at the same pressure or velocity as measured during the $H0_1$ Test.
[3] Defined in section 3.1.4.4.
[4] Defined in section 3.1.4.7.
[5] Defined in section 3.1.4.6.
[6] If the maximum speed is limited below 17 °F, this test becomes required.
[7] If the cutoff temperature is higher than 2 °F, run at the cutoff temperature.
[8] If maximum speed is limited by unit control, this test should run at the maximum speed allowed by the control, in such case, the speed is different from the maximum speed defined in the definition section.

c. For multiple-split heat pumps (only), the following procedures supersede the above requirements. For all Table 13 tests specified for a minimum compressor speed, at least one indoor unit must be turned off. The manufacturer shall designate the particular indoor unit(s) that is turned off. The manufacturer must also specify the compressor speed used for the Table 13 $H2_V$ Test, a heating mode intermediate compressor speed that falls within ¼ and ¾ of the difference between the maximum and minimum heating mode speeds. The manufacturer should prescribe an intermediate speed that is expected to yield the highest COP for the given $H2_V$ Test conditions and bracketed compressor speed range. The manufacturer can designate that one or more specific indoor units are turned off for the $H2_V$ Test.

3.6.5 Additional test for a heat pump having a heat comfort controller.

Test any heat pump that has a heat comfort controller (see section 1.2, Definitions) according to section 3.6.1, 3.6.2, or 3.6.3, whichever applies, with the heat comfort controller disabled. Additionally, conduct the abbreviated test described in section 3.1.9 with the heat comfort controller active to determine the system's maximum supply air temperature. (Note: Heat pumps having a variable speed compressor and a heat comfort controller are not covered in the test procedure at this time.)

3.6.6 Heating mode tests northern heat pumps with triple-capacity compressors.

Test triple-capacity, northern heat pumps for the heating mode as follows:

a. Conduct one maximum-temperature test ($H0_1$), two high-temperature tests ($H1_2$ and $H1_1$), one Frost Accumulation test ($H2_2$), two low-temperature tests ($H3_2$, $H3_3$), and one minimum-temperature test ($H4_3$). Conduct an additional Frost Accumulation test ($H2_1$) and low-temperature test ($H3_1$) if both of the following conditions exist: (1) Knowledge of the heat pump's capacity and electrical power at low compressor capacity for outdoor temperatures of 37 °F and less is needed to complete the section 4.2.6 seasonal performance calculations; and (2) the heat pump's controls allow low-capacity operation at outdoor temperatures of 37 °F and less. If the above two conditions are met, an alternative to conducting the $H2_1$ Frost Accumulation Test to determine $\dot{Q}_h^{k=1}(35)$ and $\dot{E}_h^{k=1}(35)$ is to use the following equations to approximate this capacity and electrical power:

$$\dot{Q}_h^{k=1}(35) = 0.90 * \left\{\dot{Q}_h^{k=1}(17) + 0.6 * \left[\dot{Q}_h^{k=1}(47) - \dot{Q}_h^{k=1}(17)\right]\right\}$$

$$\dot{E}_h^{k=1}(35) = 0.985 * \left\{\dot{E}_h^{k=1}(17) + 0.6 * \left[\dot{E}_h^{k=1}(47) - \dot{E}_h^{k=1}(17)\right]\right\}$$

In evaluating the above equations, determine the quantities $\dot{Q}_h^{k=1}(47)$ from the $H1_1$ Test and evaluate them according to section 3.7. Determine the quantities $\dot{Q}_h^{k=1}(17)$ and $\dot{E}_h^{k=1}(17)$ from the $H3_1$ Test and evaluate them according to section 3.10. Use the paired values of $\dot{Q}_h^{k=1}(35)$ and $\dot{E}_h^{k=1}(35)$ derived from conducting the $H2_1$ Frost Accumulation Test and evaluated as specified in section 3.9.1 or use the paired values calculated using the above default equations, whichever contribute to a higher Region IV HSPF based on the DHR.

b. Conducting a Frost Accumulation Test ($H2_3$) with the heat pump operating at its booster capacity is optional. If this optional test is not conducted, determine $\dot{Q}_h^{k=3}(35)$ and $\dot{E}_h^{k=3}(35)$ using the following equations to approximate this capacity and electrical power:

$$\dot{Q}_h^{k=3}(35) = QR_h^{k=2}(35) * \{\dot{Q}_h^{k=3}(17) + 1.20 * [\dot{Q}_h^{k=3}(17) - \dot{Q}_h^{k=3}(2)]\}$$

$$\dot{E}_h^{k=3}(35) = PR_h^{k=2}(35) * \{\dot{E}_h^{k=3}(17) + 1.20 * [\dot{E}_h^{k=3}(17) - \dot{E}_h^{k=3}(2)]\}$$

where,

$$QR_h^{k=2}(35) = \frac{\dot{Q}_h^{k=2}(35)}{\dot{Q}_h^{k=2}(17) + 0.6 * [\dot{Q}_h^{k=2}(47) - \dot{Q}_h^{k=2}(17)]}$$

$$PR_h^{k=2}(35) = \frac{\dot{E}_h^{k=2}(35)}{\dot{E}_h^{k=2}(17) + 0.6 * [\dot{E}_h^{k=2}(47) - \dot{E}_h^{k=2}(17)]}$$

Determine the quantities $\dot{Q}_h^{k=2}(47)$ and $\dot{E}_h^{k=2}(47)$ from the $H1_2$ Test and evaluate them according to section 3.7. Determine the quantities $\dot{Q}_h^{k=2}(35)$ and $\dot{E}_h^{k=2}(35)$ from the $H2_2$Test and evaluate them according to section 3.9.1. Determine the quantities $\dot{Q}_h^{k=2}(17)$ and $\dot{E}_h^{k=2}(17)$ from the $H3_2$Test, determine the quantities $\dot{Q}_h^{k=3}(17)$ and $\dot{E}_h^{k=3}(17)$ from the $H3_3$Test, and determine the quantities $\dot{Q}_h^{k=3}(2)$ and $\dot{E}_h^{k=3}(2)$ from the $H4_3$Test. Evaluate all six quantities according to section 3.10. Use the paired values of $\dot{Q}_h^{k=3}(35)$ and $\dot{E}_h^{k=3}(35)$ derived from conducting the $H2_3$Frost Accumulation Test and calculated as specified in section 3.9.1 or use the paired values calculated using the above default equations, whichever contribute to a higher Region IV HSPF based on the DHR.

c. Conduct the high-temperature cyclic test ($H1C_1$) to determine the heating mode cyclic-degradation coefficient, C_D^h. If a triple-capacity heat pump locks out low capacity operation at lower outdoor temperatures, conduct the high-temperature cyclic test ($H1C_2$) to determine the high-capacity heating mode cyclic-degradation coefficient, C_D^h (k=2). The default C_D^h (k=2) is the same value as determined or assigned for the low-capacity cyclic-degradation coefficient, C_D^h [or equivalently, C_D^h (k=1)]. Finally, if a triple-capacity heat pump locks out both low and high capacity operation at the lowest outdoor temperatures, conduct the low-temperature cyclic test ($H3C_3$) to determine the booster-capacity heating mode cyclic-degradation coefficient, C_D^h (k=3). The default C_D^h (k=3) is the same value as determined or assigned for the high-capacity cyclic-degradation coefficient, C_D^h [or equivalently, C_D^h (k=2)]. Table 14 specifies test conditions for all 13 tests.

TABLE 14— HEATING MODE TEST CONDITIONS FOR UNITS WITH A TRIPLE-CAPACITY COMPRESSOR

Test description	Air entering indoor unit temperature °F		Air entering outdoor unit temperature °F		Compressor capacity	Heating air volume rate
	Dry bulb	Wet bulb	Dry bulb	Wet bulb		
$H0_1$ Test (required, steady).	70	60 (max)	62	56.5	Low	Heating Minimum.[1]
$H1_2$ Test (required, steady).	70	60 (max)	47	43	High	Heating Full-Load.[2]
$H1C_2$ Test (required, cyclic).	70	60 (max)	47	43	High	([3])
$H1_1$ Test (required)	70	60 (max)	47	43	Low	Heating Minimum.[1]
$H1C_1$ Test (required, cyclic).	70	60 (max)	47	43	Low	([4])
$H2_3$ Test (optional, steady).	70	60 (max)	35	33	Booster	Heating Full-Load.[2]
$H2_2$ Test (required)	70	60 (max)	35	33	High	Heating Full-Load.[2]
$H2_1$ Test (required)	70	60 (max)	35	33	Low	Heating Minimum.[1]
$H3_3$ Test (required, steady).	70	60 (max)	17	15	Booster	Heating Full-Load.[2]
$H3C_3$ Test (max)[5 6] (required, cyclic).	70	60 (max)	17	15	Booster	([7])
$H3_2$ Test (required, steady).	70	60 (max)	17	15	High	Heating Full-Load.[2]
$H3_1$ Test[5] (required, steady).	70	60 (max)	17	15	Low	Heating Minimum.[1]
$H4_3$ Test (required, steady).	70	60 (max)	2	1	Booster	Heating Full-Load.[2]

[1] Defined in section 3.1.4.5.

[2] Defined in section 3.1.4.4.

[3] Maintain the airflow nozzle(s) static pressure difference or velocity pressure during the ON period at the same pressure or velocity as measured during the $H1_2$ Test.

[4] Maintain the airflow nozzle(s) static pressure difference or velocity pressure during the ON period at the same pressure or velocity as measured during the $H1_1$Test.

[5] Required only if the heat pump's performance when operating at low compressor capacity and outdoor temperatures less than 37°F is needed to complete the section 4.2.6 HSPF calculations.

[6] If table note [5] applies, the section 3.6.6 equations for $\dot{Q}_h^{k=1}(35)$ and $\dot{E}_h^{k=1}(17)$ may be used in lieu of conducting the $H2_I$ Test.
[7] Maintain the airflow nozzle(s) static pressure difference or velocity pressure during the ON period at the same pressure or velocity as measured during the $H3_3$ Test.

3.7 Test procedures for steady-state Maximum Temperature and High Temperature heating mode tests (the $H0_1$, H1, $H1_2$, $H1_1$, and $H1_N$ Tests).

a. For the pretest interval, operate the test room reconditioning apparatus and the heat pump until equilibrium conditions are maintained for at least 30 minutes at the specified section 3.6 test conditions. Use the exhaust fan of the airflow measuring apparatus and, if installed, the indoor blower of the heat pump to obtain and then maintain the indoor air volume rate and/or the external static pressure specified for the particular test. Continuously record the dry-bulb temperature of the air entering the indoor coil, and the dry-bulb temperature and water vapor content of the air entering the outdoor coil. Refer to section 3.11 for additional requirements that depend on the selected secondary test method. After satisfying the pretest equilibrium requirements, make the measurements specified in Table 3 of ASHRAE Standard 37–2009 for the Indoor Air Enthalpy method and the user-selected secondary method. Make said Table 3 measurements at equal intervals that span 5 minutes or less. Continue data sampling until a 30-minute period (*e.g.,* four consecutive 10-minute samples) is reached where the test tolerances specified in Table 15 are satisfied. For those continuously recorded parameters, use the entire data set for the 30-minute interval when evaluating Table 15 compliance. Determine the average electrical power consumption of the heat pump over the same 30-minute interval.

TABLE 15—TEST OPERATING AND TEST CONDITION TOLERANCES FOR SECTION 3.7 AND SECTION 3.10 STEADY-STATE HEATING MODE TESTS

	Test operating tolerance [1]	Test condition tolerance [1]
Indoor dry-bulb, °F:		
Entering temperature	2.0	0.5
Leaving temperature	2.0	
Indoor wet-bulb, °F:		
Entering temperature	1.0	
Leaving temperature	1.0	
Outdoor dry-bulb, °F:		
Entering temperature	2.0	0.5
Leaving temperature	[2] 2.0	
Outdoor wet-bulb, °F:		
Entering temperature	1.0	0.3
Leaving temperature	[2] 1.0	
External resistance to airflow, inches of water	0.12	[3] 0.02
Electrical voltage, % of rdg	2.0	1.5
Nozzle pressure drop, % of rdg	8.0	

[1] See section 1.2, Definitions.
[2] Only applies when the Outdoor Air Enthalpy Method is used.
[3] Only applies when testing non-ducted units.

b. Calculate indoor-side total heating capacity as specified in sections 7.3.4.1 and 7.3.4.3 of ASHRAE Standard 37–2009. Do not adjust the parameters used in calculating capacity for the permitted variations in test conditions. Assign the average space heating capacity and electrical power over the 30-minute data collection interval to the variables $\dot{Q}_h^k$ and $\dot{E}_h^k(T)$ respectively. The ''T'' and superscripted ''k'' are the same as described in section 3.3. Additionally, for the heating mode, use the superscript to denote results from the optional $H1_N$ Test, if conducted.c. For heat pumps tested without an indoor blower installed, increase $\dot{Q}_h^k(T)$ by

$$\frac{1505\,\frac{Btu}{h}}{1000\,scfm} * \bar{\dot{V}}_s$$

and increase $\dot{E}_h^k(T)$ by,

$$\frac{441\,W}{1000\,scfm} * \bar{\dot{V}}_s$$

and increase $\dot{E}_h^k(T)$ by,

where $\bar{V}_s$ is the average measured indoor air volume rate expressed in units of cubic feet per minute of standard air (scfm). During the 30-minute data collection interval of a High Temperature Test, pay attention to preventing a defrost cycle. Prior to this time, allow the heat pump to perform a defrost cycle if automatically initiated by its own controls. As in all cases, wait for the heat pump's defrost controls to automatically terminate the defrost cycle. Heat pumps that undergo a defrost should operate in the heating mode for at least 10 minutes after defrost termination prior to beginning the 30-minute data collection interval. For some heat pumps, frost may accumulate on the outdoor coil during a High Temperature test. If the indoor coil leaving air temperature or the difference between the leaving and entering air temperatures decreases by more than 1.5 °F over the 30-minute data collection interval, then do not use the collected data to determine capacity. Instead, initiate a defrost cycle. Begin collecting data no sooner than 10 minutes after defrost termination. Collect 30 minutes of new data during which the Table 15 test tolerances are satisfied. In this case, use only the results from the second 30-minute data collection interval to evaluate $\dot{Q}_h^k(47)$ and $\dot{E}_h^k(47)$.

c. For heat pumps tested without an indoor blower installed, increase $\dot{Q}_h^k(T)$ by

$$\frac{1250\,BTU/h}{1000\,scfm} * \bar{\dot{V}}_s$$

and increase $\dot{E}_h^k(T)$ by,

$$\frac{365\,W}{1000\,scfm} * \bar{\dot{V}}_s$$

and increase $\dot{E}_h^k(T)$ by,

where $\bar{\dot{V}}_s$ is the average measured indoor air volume rate expressed in units of cubic feet per minute of standard air (scfm). During the 30-minute data collection interval of a High Temperature Test, pay attention to preventing a defrost cycle. Prior to this time, allow the heat pump to perform a defrost cycle if automatically initiated by its own controls. As in all cases, wait for the heat pump's defrost controls to automatically terminate the defrost cycle. Heat pumps that undergo a defrost should operate in the heating mode for at least 10 minutes after defrost termination prior to beginning the 30-minute data collection interval. For some heat pumps, frost may accumulate on the outdoor coil during a High Temperature test. If the indoor coil leaving air temperature or the difference between the leaving and entering air temperatures decreases by more than 1.5 °F over the 30-minute data collection interval, then do not use the collected data to determine capacity. Instead, initiate a defrost cycle. Begin collecting data no sooner than 10 minutes after defrost termination. Collect 30 minutes of new data during which the Table 15 test tolerances are satisfied. In this case, use only the results from the second 30-minute data collection interval to evaluate $\dot{Q}_h^k(47)$ and $\dot{E}_h^k(47)$.

d. If conducting the cyclic heating mode test, which is described in section 3.8, record the average indoor-side air volume rate, $\bar{\dot{V}}$, specific heat of the air, $C_{p,a}$ (expressed on dry air basis), specific volume of the air at the nozzles, v_n' (or v_n), humidity ratio at the nozzles, W_n, and either pressure difference or velocity pressure for the flow nozzles. If either or both of the below criteria apply, determine the average, steady-state, electrical power consumption of the indoor blower motor ($\dot{E}_{fan,1}$):

1. The section 3.8 cyclic test will be conducted and the heat pump has a variable-speed indoor blower that is expected to be disabled during the cyclic test; or

2. The heat pump has a (variable-speed) constant-air volume-rate indoor blower and during the steady-state test the average external static pressure (ΔP_1) exceeds the applicable section 3.1.4.4 minimum (or targeted) external static pressure (ΔP_{min}) by 0.03 inches of water or more.

Determine $\dot{E}_{fan,1}$ by making measurements during the 30-minute data collection interval, or immediately following the test and prior to changing the test conditions. When the above "2" criteria applies, conduct the following four steps after determining $\dot{E}_{fan,1}$ (which corresponds to ΔP_1):

i. While maintaining the same test conditions, adjust the exhaust fan of the airflow measuring apparatus until the external static pressure increases to approximately $\Delta P_1 + (\Delta P_1 - \Delta P_{min})$.

ii. After re-establishing steady readings for fan motor power and external static pressure, determine average values for the indoor blower power ($\dot{E}_{fan,2}$) and the external static pressure (ΔP_2) by making measurements over a 5-minute interval.

iii. Approximate the average power consumption of the indoor blower motor if the 30-minute test had been conducted at ΔP_{min} using linear extrapolation:

$$\dot{E}_{fan,\min} = \frac{\dot{E}_{fan,2} - \dot{E}_{fan,1}}{\Delta P_2 - \Delta P_1}(\Delta P_{\min} - \Delta P_1) + \dot{E}_{fan,1}$$

iv. Decrease the total space heating capacity, $\dot{Q}_h^k(T)$, by the quantity ($\dot{E}_{fan,1} - \dot{E}_{fan,min}$), when expressed on a Btu/h basis. Decrease the total electrical power, $\dot{E}_h^k(T)$ by the same fan power difference, now expressed in watts.

e. If the temperature sensors used to provide the primary measurement of the indoor-side dry bulb temperature difference during the steady-state dry-coil test and the subsequent cyclic dry-coil test are different, include measurements of the latter sensors among the regularly sampled data. Beginning at the start of the 30-minute data collection period, measure and compute the indoor-side air dry-bulb temperature difference using both sets of instrumentation, ΔT (Set SS) and ΔT (Set CYC), for each equally spaced data sample. If using a consistent data sampling rate that is less than 1 minute, calculate and record minutely averages for the two temperature differences. If using a consistent sampling rate of one minute or more, calculate and record the two temperature differences from each data sample. After having recorded the seventh (i=7) set of temperature differences, calculate the following ratio using the first seven sets of values:

$$F_{CD} = \frac{1}{7}\sum_{i-6}^{i}\frac{\Delta T(Set\ SS)}{\Delta T(Set\ CYC)}$$

Each time a subsequent set of temperature differences is recorded (if sampling more frequently than every 5 minutes), calculate F_{CD} using the most recent seven sets of values. Continue these calculations until the 30-minute period is completed or until a value for F_{CD} is calculated that falls outside the allowable range of 0.94–1.06. If the latter occurs, immediately suspend the test and identify the cause for the disparity in the two temperature difference measurements. Recalibration of one or both sets of instrumentation may be required. If all the values for F_{CD} are within the allowable range, save the final value of the ratio from the 30-minute test as F_{CD}*. If the temperature sensors used to provide the primary measurement of the indoor-side dry bulb temperature difference during the steady-state dry-coil test and the subsequent cyclic dry-coil test are the same, set F_{CD}*= 1.

3.8 Test procedures for the cyclic heating mode tests (the H0C$_1$, H1C, H1C$_1$ and H1C$_2$ Tests).

a. Except as noted below, conduct the cyclic heating mode test as specified in section 3.5. As adapted to the heating mode, replace section 3.5 references to ''the steady-state dry coil test'' with ''the heating mode steady-state test conducted at the same test conditions as the cyclic heating mode test.'' Use the test tolerances in Table 16 rather than Table 9. Record the outdoor coil entering wet-bulb temperature according to the requirements given in section 3.5 for the outdoor coil entering dry-bulb temperature. Drop the subscript ''dry'' used in variables cited in section 3.5 when referring to quantities from the cyclic heating mode test. The default C_D value for heating is 0.25. If available, use electric resistance heaters (see section 2.1) to minimize the variation in the inlet air temperature. Determine the total space heating delivered during the cyclic heating test, q_{cyc}, as specified in section 3.5 except for making the following changes:

(1) When evaluating Equation 3.5–1, use the values of $\bar{V}$, $C_{p,a}$,v_n', (or v_n), and W_n that were recorded during the section 3.7 steady-state test conducted at the same test conditions.

$$\text{(2) Calculate } \Gamma \text{ using, } \Gamma = F_{CD}^{*} \int_{\tau_1}^{\tau_2} [T_{a1}(\tau) - T_{a2}(\tau)]\delta\tau, \; hr \times {}^{\circ} F,$$

where F_{CD}* is the value recorded during the section 3.7 steady-state test conducted at the same test condition.

b. For ducted heat pumps tested without an indoor blower installed (excluding the special case where a variable-speed fan is temporarily removed), increase q_{cyc} by the amount calculated using Equation 3.5–3. Additionally, increase e_{cyc} by the amount calculated using Equation 3.5–2. In making these calculations, use the average indoor air volume rate ($\bar{V}_s$) determined from the section 3.7 steady-state heating mode test conducted at the same test conditions.

c. For non-ducted heat pumps, subtract the electrical energy used by the indoor blower during the 3 minutes after compressor cutoff from the non-ducted heat pump's integrated heating capacity, q_{cyc}.

d. If a heat pump defrost cycle is manually or automatically initiated immediately prior to or during the OFF/ON cycling, operate the heat pump continuously until 10 minutes after defrost termination. After that, begin cycling the heat pump immediately or delay until the specified test conditions have been re-established. Pay attention to preventing defrosts after beginning the cycling process. For heat pumps that cycle off the indoor blower during a defrost cycle, make no effort here to restrict the air movement through the indoor coil while the fan is off. Resume the OFF/ON cycling while conducting a minimum of two complete compressor OFF/ON cycles before determining q_{cyc} and e_{cyc}.

3.8.1 Heating mode cyclic-degradation coefficient calculation.

Use the results from the cyclic test and the required steady-state test that were conducted at the same test conditions to determine the heating mode cyclic-degradation coefficient C_D^h. Add ''(k=2)'' to the coefficient if it corresponds to a two-capacity unit cycling at high capacity. For the below calculation of the heating mode cyclic degradation coefficient, do not include the duct loss correction from section 7.3.3.3 of ASHRAE Standard 37–2009 in determining $\dot{Q}_h^k(T_{cyc})$ (or q_{cyc}). The tested C_D^h is calculated as follows:

$$C_D^h = \frac{1 - \dfrac{COP_{cyc}}{COP_{ss}(T_{cyc})}}{1 - HLF}$$

where,

$$COP_{cyc} = \frac{q_{cyc}}{3.413 \frac{Btu/h}{W} * e_{cyc}}$$

the average coefficient of performance during the cyclic heating mode test, dimensionless.

$$COP_{ss}(T_{cyc}) = \frac{\dot{Q}_h^k(T_{cyc})}{3.413 \frac{Btu/h}{W} * \dot{E}_h^k(T_{cyc})}$$

the average coefficient of performance during the steady-state heating mode test conducted at the same test conditions—*i.e.,* same outdoor dry bulb temperature, T_{cyc}, and speed/capacity, k, if applicable—as specified for the cyclic heating mode test, dimensionless.

$$HLF = \frac{q_{cyc}}{\dot{Q}_h^k(T_{cyc}) * \Delta\tau_{cyc}}$$

the heating load factor, dimensionless.

T_{cyc}, the nominal outdoor temperature at which the cyclic heating mode test is conducted, 62 or 47 °F.

$\Delta\tau_{cyc}$, the duration of the OFF/ON intervals; 0.5 hours when testing a heat pump having a single-speed or two-capacity compressor and 1.0 hour when testing a heat pump having a variable-speed compressor.

Round the calculated value for C_D^h to the nearest 0.01. If C_D^h is negative, then set it equal to zero.

TABLE 16—TEST OPERATING AND TEST CONDITION TOLERANCES FOR CYCLIC HEATING MODE TESTS

	Test operating tolerance [1]	Test condition tolerance [1]
Indoor entering dry-bulb temperature,[2] °F	2.0	0.5
Indoor entering wet-bulb temperature,[2] °F	1.0	
Outdoor entering dry-bulb temperature,[2] °F	2.0	0.5
Outdoor entering wet-bulb temperature,[2] °F	2.0	1.0
External resistance to air-flow,[2] inches of water	0.12	
Airflow nozzle pressure difference or velocity pressure,[2]% of reading	2.0	[3] 2.0
Electrical voltage,[4]% of rdg	8.0	1.5

[1] See section 1.2, Definitions.

[2] Applies during the interval that air flows through the indoor (outdoor) coil except for the first 30 seconds after flow initiation. For units having a variable-speed indoor blower that ramps, the tolerances listed for the external resistance to airflow shall apply from 30 seconds after achieving full speed until ramp down begins.

[3] The test condition shall be the average nozzle pressure difference or velocity pressure measured during the steady-state test conducted at the same test conditions.

[4] Applies during the interval that at least one of the following—the compressor, the outdoor fan, or, if applicable, the indoor blower—are operating, except for the first 30 seconds after compressor start-up.

3.9 Test procedures for Frost Accumulation heating mode tests (the H2, $H2_2$, $H2_V$, and $H2_1$ Tests).

a. Confirm that the defrost controls of the heat pump are set as specified in section 2.2.1. Operate the test room reconditioning apparatus and the heat pump for at least 30 minutes at the specified section 3.6 test conditions before starting the ''preliminary'' test period. The preliminary test period must immediately precede the ''official'' test period, which is the heating and defrost interval over which data are collected for evaluating average space heating capacity and average electrical power consumption.

b. For heat pumps containing defrost controls which are likely to cause defrosts at intervals less than one hour, the preliminary test period starts at the termination of an automatic defrost cycle and ends at the termination of the next occurring automatic defrost cycle. For heat pumps containing defrost controls which are likely to cause defrosts at intervals exceeding one hour, the preliminary test period must consist of a heating interval lasting at least one hour followed by a defrost cycle that is either manually or automatically initiated. In all cases, the heat pump's own controls must govern when a defrost cycle terminates.

c. The official test period begins when the preliminary test period ends, at defrost termination. The official test period ends at the termination of the next occurring automatic defrost cycle. When testing a heat pump that uses a time-adaptive defrost control system (see section 1.2, Definitions), however, manually initiate the defrost cycle that ends the official test period at the instant indicated by instructions provided by the manufacturer. If the heat pump has not undergone a defrost after 6 hours, immediately conclude the test and use the results from the full 6-hour period to calculate the average space heating capacity and average electrical power consumption.

For heat pumps that turn the indoor blower off during the defrost cycle, take steps to cease forced airflow through the indoor coil and block the outlet duct whenever the heat pump's controls cycle off the indoor blower. If it is installed, use the outlet damper box described in section 2.5.4.1 to affect the blocked outlet duct.

d. Defrost termination occurs when the controls of the heat pump actuate the first change in converting from defrost operation to normal heating operation. Defrost initiation occurs when the controls of the heat pump first alter its normal heating operation in order to eliminate possible accumulations of frost on the outdoor coil.

e. To constitute a valid Frost Accumulation test, satisfy the test tolerances specified in Table 17 during both the preliminary and official test periods. As noted in Table 17, test operating tolerances are specified for two sub-intervals: (1) When heating, except for the first 10 minutes after the termination of a defrost cycle (Sub-interval H, as described in Table 17) and (2) when defrosting, plus these same first 10 minutes after defrost termination (Sub-interval D, as described in Table 17). Evaluate compliance with Table 17 test condition tolerances and the majority of the test operating tolerances using the averages from measurements recorded only during Sub-interval H. Continuously record the dry bulb temperature of the air entering the indoor coil, and the dry bulb temperature and water vapor content of the air entering the outdoor coil. Sample the remaining parameters listed in Table 17 at equal intervals that span 5 minutes or less.

f. For the official test period, collect and use the following data to calculate average space heating capacity and electrical power. During heating and defrosting intervals when the controls of the heat pump have the indoor blower on, continuously record the dry-bulb temperature of the air entering (as noted above) and leaving the indoor coil. If using a thermopile, continuously record the difference between the leaving and entering dry-bulb temperatures during the interval(s) that air flows through the indoor coil. For heat pumps tested without an indoor blower installed, determine the corresponding cumulative time (in hours) of indoor coil airflow, $\Delta\tau_a$. Sample measurements used in calculating the air volume rate (refer to sections 7.7.2.1 and 7.7.2.2 of ASHRAE Standard 37–2009) at equal intervals that span 10 minutes or less. (Note: In the first printing of ASHRAE Standard 37–2009, the second IP equation for Q_{mi} should read:

$$Q_{mi} = 1097CA_n\sqrt{P_V v_n'.})$$

Record the electrical energy consumed, expressed in watt-hours, from defrost termination to defrost termination, $e_{DEF}^k(35)$, as well as the corresponding elapsed time in hours, $\Delta\tau_{FR}$.

TABLE 17—TEST OPERATING AND TEST CONDITION TOLERANCES FOR FROST ACCUMULATION HEATING MODE TESTS

	Test operating tolerance [1]		Test condition tolerance [1]
	Sub-interval H [2]	Sub-interval D [3]	Sub-interval H [2]
Indoor entering dry-bulb temperature, °F	2.0	[4] 4.0	0.5
Indoor entering wet-bulb temperature, °F	1.0		
Outdoor entering dry-bulb temperature, °F	2.0	10.0	1.0
Outdoor entering wet-bulb temperature, °F	1.5		0.5
External resistance to airflow, inches of water	0.12		[5] 0.02
Electrical voltage, % of rdg	2.0		1.5

[1] See section 1.2, Definitions.
[2] Applies when the heat pump is in the heating mode, except for the first 10 minutes after termination of a defrost cycle.
[3] Applies during a defrost cycle and during the first 10 minutes after the termination of a defrost cycle when the heat pump is operating in the heating mode.
[4] For heat pumps that turn off the indoor blower during the defrost cycle, the noted tolerance only applies during the 10 minute interval that follows defrost termination.
[5] Only applies when testing non-ducted heat pumps.

3.9.1 Average space heating capacity and electrical power calculations.

a. Evaluate average space heating capacity, $\dot{Q}_h^k(35)$, when expressed in units of Btu per hour, using:

$$\dot{Q}_h^k(35) = \frac{60 * \bar{\dot{V}} * C_{p,a} * \Gamma}{\Delta\tau_{FR}[v_n' * (1 + W_n)]} = \frac{60 * \bar{\dot{V}} * C_{p,a} * \Gamma}{\Delta\tau_{FR} v_n}$$

Where,

$\bar{\dot{V}}$ = the average indoor air volume rate measured during Sub-interval H, cfm.

$C_{p,a} = 0.24 + 0.444 \cdot W_n$, the constant pressure specific heat of the air-water vapor mixture that flows through the indoor coil and is expressed on a dry air basis, Btu/lbm$_{da}$ · °F.

v_n' = specific volume of the air-water vapor mixture at the nozzle, ft^3/lbm$_{mx}$.

W_n = humidity ratio of the air-water vapor mixture at the nozzle, lbm of water vapor per lbm of dry air.

$\Delta\tau_{FR} = \tau_2 - \tau_1$, the elapsed time from defrost termination to defrost termination, hr.

$$\Gamma = \int_{\tau_1}^{\tau_2} [T_{a2}(\tau) - T_{a1}(\tau)]d\tau, \ hr * °F$$

$T_{a1}(\tau)$ = dry bulb temperature of the air entering the indoor coil at elapsed time τ, °F; only recorded when indoor coil airflow occurs; assigned the value of zero during periods (if any) where the indoor blower cycles off.

$T_{a2}(\tau)$ = dry bulb temperature of the air leaving the indoor coil at elapsed time τ, °F; only recorded when indoor coil airflow occurs; assigned the value of zero during periods (if any) where the indoor blower cycles off.

τ_1 = the elapsed time when the defrost termination occurs that begins the official test period, hr.

τ_2 = the elapsed time when the next automatically occurring defrost termination occurs, thus ending the official test period, hr.

v_n = specific volume of the dry air portion of the mixture evaluated at the dry-bulb temperature, vapor content, and barometric pressure existing at the nozzle, ft^3 per lbm of dry air.

To account for the effect of duct losses between the outlet of the indoor unit and the section 2.5.4 dry-bulb temperature grid, adjust $\dot{Q}_h^k(35)$ in accordance with section 7.3.4.3 of ASHRAE Standard 37–2009.

b. Evaluate average electrical power, $\dot{E}_h^k(35)$, when expressed in units of watts, using:

$$\dot{E}_h^k(35) = \frac{e_{def}(35)}{\Delta\tau_{FR}}$$

For heat pumps tested without an indoor blower installed, increase $\dot{Q}_h^k(35)$ by,

$$\frac{1505\frac{Btu}{h}}{1000\,scfm} * \bar{\dot{V}}_s * \frac{\Delta\tau_a}{\Delta\tau_{FR}}$$

and increase $\dot{E}_h^k(35)$ by,

$$\frac{441W}{1000\,scfm} * \bar{\dot{V}}_s * \frac{\Delta\tau_a}{\Delta\tau_{FR}}$$

where $\bar{\dot{V}}_s$ is the average indoor air volume rate measured during the Frost Accumulation heating mode test and is expressed in units of cubic feet per minute of standard air (scfm).

c. For heat pumps having a constant-air-volume-rate indoor blower, the five additional steps listed below are required if the average of the external static pressures measured during sub-Interval H exceeds the applicable section 3.1.4.4, 3.1.4.5, or 3.1.4.6 minimum (or targeted) external static pressure (ΔP_{min}) by 0.03 inches of water or more:

1. Measure the average power consumption of the indoor blower motor ($\dot{E}_{fan,1}$) and record the corresponding external static pressure (ΔP_1) during or immediately following the Frost Accumulation heating mode test. Make the measurement at a time when the heat pump is heating, except for the first 10 minutes after the termination of a defrost cycle.

2. After the Frost Accumulation heating mode test is completed and while maintaining the same test conditions, adjust the exhaust fan of the airflow measuring apparatus until the external static pressure increases to approximately $\Delta P_1 + (\Delta P_1 - \Delta P_{min})$.

3. After re-establishing steady readings for the fan motor power and external static pressure, determine average values for the indoor blower power ($\dot{E}_{fan,2}$) and the external static pressure (ΔP_2) by making measurements over a 5-minute interval.

4. Approximate the average power consumption of the indoor blower motor had the Frost Accumulation heating mode test been conducted at ΔP_{min} using linear extrapolation:

$$\dot{E}_{fan,\min} = \frac{\dot{E}_{fan,2} - \dot{E}_{fan,1}}{\Delta P_2 - \Delta P_1}(\Delta P_{\min} - \Delta P_1) + \dot{E}_{fan,1}$$

5. Decrease the total heating capacity, $\dot{Q}_h^k(35)$, by the quantity $[(\dot{E}_{fan,1} - \dot{E}_{fan,min}) \cdot (\Delta\tau_a/\Delta\tau_{FR}]$, when expressed on a Btu/h basis. Decrease the total electrical power, $E_h^k(35)$, by the same quantity, now expressed in watts.

3.9.2 Demand defrost credit.

a. Assign the demand defrost credit, F_{def}, that is used in section 4.2 to the value of 1 in all cases except for heat pumps having a demand-defrost control system (see section 1.2, Definitions). For such qualifying heat pumps, evaluate F_{def} using,

$$F_{def} = 1 + 0.03 * \left[1 - \frac{\Delta\tau_{def} - 1.5}{\Delta\tau_{\max} - 1.5}\right]$$

Where,

$\Delta\tau_{def}$ = the time between defrost terminations (in hours) or 1.5, whichever is greater. A value of 6 must be assigned to $\Delta\tau_{def}$ if this limit is reached during a Frost Accumulation test and the heat pump has not completed a defrost cycle.

$\Delta\tau_{max}$ = maximum time between defrosts as allowed by the controls (in hours) or 12, whichever is less, as provided in the installation manuals included with the unit by the manufacturer.

b. For two-capacity heat pumps and for section 3.6.2 units, evaluate the above equation using the $\Delta\tau_{def}$ that applies based on the Frost Accumulation Test conducted at high capacity and/or at the Heating Full-load Air Volume Rate. For variable-speed heat pumps, evaluate $\Delta\tau_{def}$ based on the required Frost Accumulation Test conducted at the intermediate compressor speed.

3.10 Test procedures for steady-state Low Temperature heating mode tests (the H3, $H3_2$, $H3_1$ and $H4_2$ Tests).

Except for the modifications noted in this section, conduct the Low Temperature heating mode test using the same approach as specified in section 3.7 for the Maximum and High Temperature tests. After satisfying the section 3.7 requirements for the pretest interval but before beginning to collect data to determine $\dot{Q}_h^k(17)$ and $\dot{E}_h^k(17)$, conduct a defrost cycle. This defrost cycle may be manually or automatically initiated. The defrost sequence must be terminated by the action of the heat pump's defrost controls. Begin the 30-minute data collection interval described in section 3.7, from which $\dot{Q}_h^k(17)$ and $\dot{E}_h^k(17)$ are determined, no sooner than 10 minutes after defrost termination. Defrosts should be prevented over the 30-minute data collection interval. Defrost cycle is not required for $H4_2$ Test.

3.11 Additional requirements for the secondary test methods.

3.11.1 If using the Outdoor Air Enthalpy Method as the secondary test method.

During the ''official'' test, the outdoor air-side test apparatus described in section 2.10.1 is connected to the outdoor unit. To help compensate for any effect that the addition of this test apparatus may have on the unit's performance, conduct a ''preliminary'' test where the outdoor air-side test apparatus is disconnected. Conduct a preliminary test prior to the first section 3.2 steady-state cooling mode test and prior to the first section 3.6 steady-state heating mode test. No other preliminary tests are required so long as the unit operates the outdoor fan during all cooling mode steady-state tests at the same speed and all heating mode steady-state tests at the same speed. If using more than one outdoor fan speed for the cooling mode steady-state tests, however, conduct a preliminary test prior to each cooling mode test where a different fan speed is first used. This same requirement applies for the heating mode tests.

3.11.1.1 If a preliminary test precedes the official test.

a. The test conditions for the preliminary test are the same as specified for the official test. Connect the indoor air-side test apparatus to the indoor coil; disconnect the outdoor air-side test apparatus. Allow the test room reconditioning apparatus and the unit being tested to operate for at least one hour. After attaining equilibrium conditions, measure the following quantities at equal intervals that span 5 minutes or less:

1. The section 2.10.1 evaporator and condenser temperatures or pressures;

2. Parameters required according to the Indoor Air Enthalpy Method.

Continue these measurements until a 30-minute period (*e.g.,* four consecutive 10-minute samples) is obtained where the Table 8 or Table 15, whichever applies, test tolerances are satisfied.

b. After collecting 30 minutes of steady-state data, reconnect the outdoor air-side test apparatus to the unit. Adjust the exhaust fan of the outdoor airflow measuring apparatus until averages for the evaporator and condenser temperatures, or the saturated temperatures corresponding to the measured pressures, agree within ±0.5 °F of the averages achieved when the outdoor air-side test apparatus was disconnected. Calculate the averages for the reconnected case using five or more consecutive readings taken at one minute intervals. Make these consecutive readings after re-establishing equilibrium conditions and before initiating the official test.

3.11.1.2 If a preliminary test does not precede the official test.

Connect the outdoor-side test apparatus to the unit. Adjust the exhaust fan of the outdoor airflow measuring apparatus to achieve the same external static pressure as measured during the prior preliminary test conducted with the unit operating in the same cooling or heating mode at the same outdoor fan speed.

3.11.1.3 Official test.

a. Continue (preliminary test was conducted) or begin (no preliminary test) the official test by making measurements for both the Indoor and Outdoor Air Enthalpy Methods at equal intervals that span 5 minutes or less. Discontinue these measurements only after obtaining a 30-minute period where the specified test condition and test operating tolerances are satisfied. To constitute a valid official test:

(1) Achieve the energy balance specified in section 3.1.1; and,

(2) For cases where a preliminary test is conducted, the capacities determined using the Indoor Air Enthalpy Method from the official and preliminary test periods must agree within 2.0 percent.

b. For space cooling tests, calculate capacity from the outdoor air-enthalpy measurements as specified in sections 7.3.3.2 and 7.3.3.3 of ASHRAE Standard 37–2009. Calculate heating capacity based on outdoor air-enthalpy measurements as specified in sections 7.3.4.2 and 7.3.3.4.3 of the same ASHRAE Standard. Adjust the outdoor-side capacity according to section 7.3.3.4 of ASHRAE Standard 37–2009 to account for line losses when testing split systems. Use the outdoor unit fan power as measured during the official test and not the value measured during the preliminary test, as described in section 8.6.2 of ASHRAE Standard 37–2009, when calculating the capacity.

3.11.2 If using the Compressor Calibration Method as the secondary test method.

a. Conduct separate calibration tests using a calorimeter to determine the refrigerant flow rate. Or for cases where the superheat of the refrigerant leaving the evaporator is less than 5 °F, use the calorimeter to measure total capacity rather than refrigerant flow rate. Conduct these calibration tests at the same test conditions as specified for the tests in this appendix. Operate the unit for at least one hour or until obtaining equilibrium conditions before collecting data that will be used in determining the average refrigerant flow rate or total capacity. Sample the data at equal intervals that span 5 minutes or less. Determine average flow rate or average capacity from data sampled over a 30-minute period where the Table 8 (cooling) or the Table 15 (heating) tolerances are satisfied. Otherwise, conduct the calibration tests according to sections 5, 6, 7, and 8 of ASHRAE Standard 23.1–2010; sections 5, 6, 7, 8, 9, and 11 of ASHRAE Standard 41.9–2011; and section 7.4 of ASHRAE Standard 37–2009 (incorporated by reference, see § 430.3).

b. Calculate space cooling and space heating capacities using the compressor calibration method measurements as specified in section 7.4.5 and 7.4.6 respectively, of ASHRAE Standard 37–2009.

3.11.3 If using the Refrigerant-Enthalpy Method as the secondary test method.

Conduct this secondary method according to section 7.5 of ASHRAE Standard 37–2009. Calculate space cooling and heating capacities using the refrigerant-enthalpy method measurements as specified in sections 7.5.4 and 7.5.5, respectively, of the same ASHRAE Standard.

3.12 Rounding of space conditioning capacities for reporting purposes.

a. When reporting rated capacities, round them off as specified in 10 CFR 430.23 (for a single unit) and in 10 CFR 429.16 (for a sample).

b. For the capacities used to perform the section 4 calculations, however, round only to the nearest integer.

3.13 Laboratory testing to determine off mode average power ratings.

Conduct one of the following tests after the completion of the B, B_1, or B_2 Test, whichever comes last: If the central air conditioner or heat pump lacks a compressor crankcase heater, perform the test in section 3.13.1; if the central air conditioner or heat pump has compressor crankcase heater that lacks controls, perform the test in section 3.13.1; if the central air conditioner or heat pump has a compressor crankcase heater equipped with controls, perform the test in section 3.13.2.

3.13.1 This test determines the off mode average power rating for central air conditioners and heat pumps that lack a compressor crankcase heater, or have a compressor crankcase heater that lacks controls.

a. Configure Controls: Configure the controls of the central air conditioner or heat pump so that it operates as if connected to a building thermostat that is set to the OFF position. This particular test contains no requirements as to ambient conditions within the test rooms, and room conditions are allowed to change during the test. Ensure that the low-voltage transformer and low-voltage components are connected.

b. Measure $P1_x$: Determine the average power from non-zero value data measured over a 5-minute interval of the non-operating central air conditioner or heat pump and designate the average power as $P1_x$, the shoulder season total off mode power.

c. Measure P_x for coil-only split systems (that would be installed in the field with a furnace having a dedicated board for indoor controls) and for blower-coil split systems for which a furnace is the designated air mover: Disconnect all low-voltage wiring for the *outdoor* components and *outdoor* controls from the low-voltage transformer. Determine the average power from non-zero value data measured over a 5-minute interval of the power supplied to the (remaining) low-voltage components of the central air conditioner or heat pump, or low-voltage power, P_x.

d. Calculate *P1:*

Single-package systems and blower coil split systems for which the designated air mover is not a furnace: Divide the shoulder season total off mode power ($P1_x$) by the number of compressors to calculate *P1*, the shoulder season per-compressor off mode power. If the compressor is a modulating-type, assign a value of 1.5 for the number of compressors. Round *P1* to the nearest watt and record as both *P1* and *P2*, the latter of which is the heating season per-compressor off mode power. The expression for calculating *P1* is as follows:

$$P1 = \frac{P1_x}{number\ of\ compressors}.$$

Coil-only split systems (that would be installed in the field with a furnace having a dedicated board for indoor controls) and blower-coil split systems for which a furnace is the designated air mover: Subtract the low-voltage power (P_x) from the shoulder season total off mode power ($P1_x$) and divide by the number of compressors to calculate *P1,* the shoulder season per-compressor off mode power. If the compressor is a modulating-type, assign a value of 1.5 for the number of compressors. Round *P1* to the nearest watt and record as both *P1* and *P2,* the latter of which is the heating season per-compressor off mode power. The expression for calculating *P1* is as follows:

$$P1 = \frac{P1_x - P_x}{number\ of\ compressors}.$$

3.13.2 This test determines the off mode average power rating for central air conditioners and heat pumps that have a compressor crankcase heater equipped with controls.

a. Configure Controls: Position a temperature sensor to measure the outdoor dry-bulb temperature in the air between 2 and 6 inches from the crankcase heater temperature sensor or, if no such temperature sensor exists, position it in the air between 2 and 6 inches from the crankcase heater. Utilize the temperature measurements from this sensor for this portion of the test procedure. Configure the controls of the central air conditioner or heat pump so that it operates as if connected to a building thermostat that is set to the OFF position. Ensure that the low-voltage transformer and low-voltage components are connected. Adjust the outdoor temperature at a rate of change of no more than 20 °F per hour and achieve an outdoor dry-bulb temperature of 72 °F. Maintain this temperature within ±2 °F for at least 5 minutes, while maintaining an indoor dry-bulb temperature of between 75 °F and 85 °F.

b. Measure $P1_x$: Determine the average power from non-zero value data measured over a 5-minute interval of the non-operating central air conditioner or heat pump and designate the average power as $P1_x$, the shoulder season total off mode power.

c. Reconfigure Controls: In the process of reaching the target outdoor dry-bulb temperature, adjust the outdoor temperature at a rate of change of no more than 20 °F per hour. This target temperature is the temperature specified by the manufacturer in the DOE Compliance Certification Database at which the crankcase heater turns on, minus five degrees Fahrenheit. Maintain this temperature within ±2 °F for at least 5 minutes, while maintaining an indoor dry-bulb temperature of between 75 °F and 85 °F.

d. Measure $P2_x$: Determine the average non-zero power of the non-operating central air conditioner or heat pump over a 5-minute interval and designate it as $P2_x$, the heating season total off mode power.

e. Measure P_x for coil-only split systems (that would be installed in the field with a furnace having a dedicated board for indoor controls) and for blower-coil split systems for which a furnace is the designated air mover: Disconnect all low-voltage wiring for the *outdoor* components and *outdoor* controls from the low-voltage transformer. Determine the average power from non-zero value data measured over a 5-minute interval of the power supplied to the (remaining) low-voltage components of the central air conditioner or heat pump, or low-voltage power, P_x

f. Calculate *P1:*

Single-package systems and blower coil split systems for which the air mover is not a furnace: Divide the shoulder season total off mode power ($P1_x$) by the number of compressors to calculate *P1*, the shoulder season per-compressor off mode power. Round to the nearest watt. If the compressor is a modulating-type, assign a value of 1.5 for the number of compressors. The expression for calculating *P1* is as follows:

$$P1 = \frac{P1_x}{number\ of\ compressors}.$$

Coil-only split systems (that would be installed in the field with a furnace having a dedicated board for indoor controls) and blower-coil split systems for which a furnace is the designated air mover: Subtract the low-voltage power (P_x) from the shoulder season total off mode power ($P1_x$) and divide by the number of compressors to calculate *P1,* the shoulder season per-compressor off mode power. Round to the nearest watt. If the compressor is a modulating-type, assign a value of 1.5 for the number of compressors. The expression for calculating *P1* is as follows:

$$P1 = \frac{P1_x - P_x}{number\ of\ compressors}.$$

h. Calculate *P2*:

Single-package systems and blower coil split systems for which the air mover is not a furnace: Divide the heating season total off mode power ($P2_x$) by the number of compressors to calculate *P2*, the heating season per-compressor off mode power. Round to the nearest watt. If the compressor is a modulating-type, assign a value of 1.5 for the number of compressors. The expression for calculating *P2* is as follows:

$$P2 = \frac{P2_x}{number\ of\ compressors}.$$

Coil-only split systems (that would be installed in the field with a furnace having a dedicated board for indoor controls) and blower-coil split systems for which a furnace is the designated air mover: Subtract the low-voltage power (P_x) from the heating season total off mode power ($P2_x$) and divide by the number of compressors to calculate *P2*, the heating season per-compressor off mode power. Round to the nearest watt. If the compressor is a modulating-type, assign a value of 1.5 for the number of compressors. The expression for calculating *P2* is as follows:

$$P2 = \frac{P2_x - P_x}{number\ of\ compressors}.$$

4. Calculations of Seasonal Performance Descriptors

4.1 Seasonal Energy Efficiency Ratio (SEER) Calculations. SEER must be calculated as follows: For equipment covered under sections 4.1.2, 4.1.3, and 4.1.4, evaluate the seasonal energy efficiency ratio, Equation 4.1-1 $SEER = \frac{\sum_{j=1}^{8} q_c(T_j)}{\sum_{j=1}^{8} e_c(T_j)} = \frac{\sum_{j=1}^{8} \frac{q_c(T_j)}{N}}{\sum_{j=1}^{8} \frac{e_c(T_j)}{N}}$

where,

$\frac{q_c(T_j)}{N}$ = the ratio of the total space cooling provided during periods of the space cooling season when the outdoor temperature fell within the range represented by bin temperature T_j to the total number of hours in the cooling season (N), Btu/h.

$\frac{e_c(T_j)}{N}$ = the electrical energy consumed by the test unit during periods of the space cooling season when the outdoor temperature fell within the range represented by bin temperature T_j to the total number of hours in the cooling season (N), W.

T_j = the outdoor bin temperature, °F. Outdoor temperatures are grouped or "binned." Use bins of 5 °F with the 8 cooling season bin temperatures being 67, 72, 77, 82, 87, 92, 97, and 102 °F.

j = the bin number. For cooling season calculations, j ranges from 1 to 8.

Additionally, for sections 4.1.2, 4.1.3, and 4.1.4, use a building cooling load, $BL(T_j)$. When referenced, evaluate $BL(T_j)$ for cooling using,

$$BL(T_j) = \frac{(T_j - 65)}{95 - 65} * \frac{\dot{Q}_c^{k=2}(95)}{1.1}$$

where,

$\dot{Q}_c^{k=2}(95)$ = the space cooling capacity determined from the A_2 Test and calculated as specified in section 3.3, Btu/h.

1.1 = sizing factor, dimensionless.

The temperatures 95 °F and 65 °F in the building load equation represent the selected outdoor design temperature and the zero-load base temperature, respectively.

4.1.1 SEER calculations for an air conditioner or heat pump having a single-speed compressor that was tested with a fixed-speed indoor blower installed, a constant-air-volume-rate indoor blower installed, or with no indoor blower installed.

a. Evaluate the seasonal energy efficiency ratio, expressed in units of Btu/watt-hour, using:

$SEER = PLF(0.5) * EER_B$

Where,

$EER_B = \frac{\dot{Q}_c(82)}{\dot{E}_c(82)}$ = the energy efficiency ratio determined from the B Test described in sections 3.2.1, 3.1.4.1, and 3.3, Btu/h per watt.

$PLF(0.5) = 1 - 0.5 \cdot C_D^c$, the part-load performance factor evaluated at a cooling load factor of 0.5, dimensionless.

b. Refer to section 3.3 regarding the definition and calculation of $\dot{Q}_c(82)$ and $\dot{E}_c(82)$.

4.1.2 SEER calculations for an air conditioner or heat pump having a single-speed compressor and a variable-speed variable-air-volume-rate indoor blower.

4.1.2.1 Units covered by section 3.2.2.1 where indoor blower capacity modulation correlates with the outdoor dry bulb temperature. The manufacturer must provide information on how the indoor air volume rate or the indoor blower speed varies over the outdoor temperature range of 67 °F to 102 °F. Calculate SEER using Equation 4.1–1. Evaluate the quantity $q_c(T_j)/N$ in Equation 4.1–1 using,

$$\text{Equation 4.1.2-1} \quad \frac{q_c(T_j)}{N} = X(T_j) * \dot{Q}_c(T_j) * \frac{n_j}{N}$$

where,

$$X(T_j) = \begin{Bmatrix} BL(T_j)/\dot{Q}_c(T_j) \\ or \\ 1 \end{Bmatrix} \text{whichever is less; the cooling mode load factor for}$$

temperature bin j, dimensionless.

$\dot{Q}_c(T_j)$ = the space cooling capacity of the test unit when operating at outdoor temperature, T_j, Btu/h.

n_j/N = fractional bin hours for the cooling season; the ratio of the number of hours during the cooling season when the outdoor temperature fell within the range represented by bin temperature T_j to the total number of hours in the cooling season, dimensionless.

a. For the space cooling season, assign n_j/N as specified in Table 18. Use Equation 4.1–2 to calculate the building load, $BL(T_j)$. Evaluate $\dot{Q}_c(T_j)$ using,

$$\text{Equation 4.1.2-2} \quad \dot{Q}_c(T_j) = \dot{Q}_c^{k=1}(T_j) + \frac{\dot{Q}_c^{k=2}(T_j) - \dot{Q}_c^{k=1}(T_j)}{\mathrm{FP}_c^{k=2} - \mathrm{FP}_c^{k=1}} * \left[\mathrm{FP}_c(T_j) - \mathrm{FP}_c^{k=1}\right]$$

where,

$$\dot{Q}_c^{k=1}(T_j) = \dot{Q}_c^{k=1}(82) + \frac{\dot{Q}_c^{k=1}(95) - \dot{Q}_c^{k=1}(82)}{95 - 82} * (T_j - 82)$$

the space cooling capacity of the test unit at outdoor temperature T_j if operated at the Cooling Minimum Air Volume Rate, Btu/h.

$$\dot{Q}_c^{k=2}(T_j) = \dot{Q}_c^{k=2}(82) + \frac{\dot{Q}_c^{k=2}(95) - \dot{Q}_c^{k=2}(82)}{95 - 82} * (T_j - 82)$$

the space cooling capacity of the test unit at outdoor temperature T_j if operated at the Cooling Full-load Air Volume Rate, Btu/h.

b. For units where indoor blower speed is the primary control variable, $FP_c^{k=1}$ denotes the fan speed used during the required A_1 and B_1 Tests (see section 3.2.2.1), $FP_c^{k=2}$ denotes the fan speed used during the required A_2 and B_2 Tests, and $FP_c(T_j)$ denotes the fan speed used by the unit when the outdoor temperature equals T_j. For units where indoor air volume rate is the primary control variable, the three FP_c's are similarly defined only now being expressed in terms of air volume rates rather than fan speeds. Refer to sections 3.2.2.1, 3.1.4 to 3.1.4.2, and 3.3 regarding the definitions and calculations of $\dot{Q}_c^{k=1}(82)$, $\dot{Q}_c^{k=1}(95)$, $\dot{Q}_c^{k=2}(82)$, and $\dot{Q}_c^{k=2}(95)$.

Calculate $e_c(T_j)/N$ in Equation 4.1-1 using, Equation 4.1.2-3

$$\frac{e_c(T_j)}{N} = \frac{X(T_j) * \dot{E}_c(T_j)}{PLF_j} * \frac{n_j}{N}$$

Where,

$PLF_j = 1 - C_D^c \cdot [1 - X(T_j)]$, the part load factor, dimensionless.

$\dot{E}_c(T_j)$ = the electrical power consumption of the test unit when operating at outdoor temperature T_j, W.

c. The quantities $X(T_j)$ and n_j/N are the same quantities as used in Equation 4.1.2–1.

d. Evaluate $\dot{E}_c(T_j)$ using,

$$\dot{E}_c(T_j) = \dot{E}_c^{k=1}(T_j) + \frac{\dot{E}_c^{k=2}(T_j) - \dot{E}_c^{k=1}(T_j)}{\mathrm{FP}_c^{k=2} - \mathrm{FP}_c^{k=1}} * [\mathrm{FP}_c(T_j) - \mathrm{FP}_c^{k=1}]$$

where,

$$\dot{E}_c^{k=1}(T_j) = \dot{E}_c^{k=1}(82) + \frac{\dot{E}_c^{k=1}(95) - \dot{E}_c^{k=1}(82)}{95 - 82} * (T_j - 82)$$

the electrical power consumption of the test unit at outdoor temperature T_j if operated at the Cooling Minimum Air Volume Rate, W.

$$\dot{E}_c^{k=2}(T_j) = \dot{E}_c^{k=2}(82) + \frac{\dot{E}_c^{k=2}(95) - \dot{E}_c^{k=2}(82)}{95 - 82} * (T_j - 82)$$

the electrical power consumption of the test unit at outdoor temperature T_j if operated at the Cooling Full-load Air Volume Rate, W.

e. The parameters $FP_c^{k=1}$, and $FP_c^{k=2}$, and $FP_c(T_j)$ are the same quantities that are used when evaluating Equation 4.1.2–2. Refer to sections 3.2.2.1, 3.1.4 to 3.1.4.2, and 3.3 regarding the definitions and calculations of $\dot{E}_c^{k=1}(82)$, $\dot{E}_c^{k=1}(95)$, $\dot{E}_c^{k=2}(82)$, and $\dot{E}_c^{k=2}(95)$.

4.1.2.2 Units covered by section 3.2.2.2 where indoor blower capacity modulation is used to adjust the sensible to total cooling capacity ratio. Calculate SEER as specified in section 4.1.1.

4.1.3 SEER calculations for an air conditioner or heat pump having a two-capacity compressor. Calculate SEER using Equation 4.1–1. Evaluate the space cooling capacity, $\dot{Q}_c^{k=1}(T_j)$, and electrical power consumption, $\dot{E}_c^{k=1}(T_j)$, of the test unit when operating at low compressor capacity and outdoor temperature T_j using,

Equation 4.1.3-1 $$\dot{Q}_c^{k=1}(T_j) = \dot{Q}_c^{k=1}(67) + \frac{\dot{Q}_c^{k=1}(82) - \dot{Q}_c^{k=1}(67)}{82-67} * (T_j - 67)$$

Equation 4.1.3-2 $$\dot{E}_c^{k=1}(T_j) = \dot{E}_c^{k=1}(67) + \frac{\dot{E}_c^{k=1}(82) - \dot{E}_c^{k=1}(67)}{82-67} * (T_j - 67)$$

where $\dot{Q}_c^{k=1}(82)$ and $\dot{E}_c^{k=1}(82)$ are determined from the B_1 Test, $\dot{Q}_c^{k=1}(67)$ and $\dot{E}_c^{k=1}(67)$ are determined from the F_1Test, and all four quantities are calculated as specified in section 3.3. Evaluate the space cooling capacity, $\dot{Q}_c^{k=2}(T_j)$, and electrical power consumption, $\dot{E}_c^{k=2}(T_j)$, of the test unit when operating at high compressor capacity and outdoor temperature T_j using,

Equation 4.1.3-3 $$\dot{Q}_c^{k=2}(T_j) = \dot{Q}_c^{k=2}(82) + \frac{\dot{Q}_c^{k=2}(95) - \dot{Q}_c^{k=2}(82)}{95-82} * (T_j - 82)$$

Equation 4.1.3-4 $$\dot{E}_c^{k=2}(T_j) = \dot{E}_c^{k=2}(82) + \frac{\dot{E}_c^{k=2}(95) - \dot{E}_c^{k=2}(82)}{95-82} * (T_j - 82)$$

where $\dot{Q}_c^{k=2}(95)$ and $\dot{E}_c^{k=2}(95)$ are determined from the A_2 Test, $\dot{Q}_c^{k=2}(82)$, and $\dot{E}_c^{k=2}(82)$, are determined from the B_2Test, and all are calculated as specified in section 3.3.

The calculation of Equation 4.1–1 quantities $q_c(T_j)/N$ and $e_c(T_j)/N$ differs depending on whether the test unit would operate at low capacity (section 4.1.3.1), cycle between low and high capacity (section 4.1.3.2), or operate at high capacity (sections 4.1.3.3 and 4.1.3.4) in responding to the building load. For units that lock out low capacity operation at higher outdoor temperatures, the manufacturer must supply information regarding this temperature so that the appropriate equations are used. Use Equation 4.1–2 to calculate the building load, $BL(T_j)$, for each temperature bin.

4.1.3.1 Steady-state space cooling capacity at low compressor capacity is greater than or equal to the building cooling load at temperature T_j, $\dot{Q}_c^{k=1}(T_j) \geq BL(T_j)$.

$$\frac{q_c(T_j)}{N} = X^{k=1}(T_j) * \dot{Q}_c^{k=1}(T_j) * \frac{n_j}{N} \qquad \frac{e_c(T_j)}{N} = \frac{X^{k=1}(T_j) * \dot{E}_c^{k=1}(T_j)}{PLF_j} * \frac{n_j}{N}$$

Where,

$X^{k=1}(T_j) = BL(T_j)/\dot{Q}_c^{k=1}(T_j)$, the cooling mode low capacity load factor for temperature bin j, dimensionless.

$PLF_j = 1 - C_D^c \cdot [1 - X^{k=1}(T_j)]$, the part load factor, dimensionless.

n_j/N, the fractional bin hours for the cooling season; the ratio of the number of hours during the cooling season when the outdoor temperature fell within the range represented by bin temperature T_j to the total number of hours in the cooling season, dimensionless. Obtain the fractional bin hours for the cooling season, n_j/N, from Table 18. Use Equations 4.1.3–1 and 4.1.3–2, respectively, to evaluate $\dot{Q}_c^{k=1}(T_j)$ and $\dot{E}_c^{k=1}(T_j)$.

TABLE 18—DISTRIBUTION OF FRACTIONAL HOURS WITHIN COOLING SEASON TEMPERATURE BINS

Bin number, j	Bin temperature range °F	Representative temperature for bin °F	Fraction of of total temperature bin hours, n_j/N
1	65–69	67	0.214
2	70–74	72	0.231
3	75–79	77	0.216
4	80–84	82	0.161
5	85–89	87	0.104
6	90–94	92	0.052
7	95–99	97	0.018
8	100–104	102	0.004

4.1.3.2 Unit alternates between high (k=2) and low (k=1) compressor capacity to satisfy the building cooling load at temperature T_j, $\dot{Q}_c^{k=1}(T_j) < BL(T_j) < \dot{Q}_c^{k=2}(T_j)$.

$$\frac{q_c(T_j)}{N} = [X^{k=1}(T_j) * \dot{Q}_c^{k=1}(T_j) + X^{k=2}(T_j) * \dot{Q}_c^{k=2}(T_j)] * \frac{n_j}{N}$$

$$\frac{e_c(T_j)}{N} = [X^{k=1}(T_j) * \dot{E}_c^{k=1}(T_j) + X^{k=2}(T_j) * \dot{E}_c^{k=2}(T_j)] * \frac{n_j}{N}$$

where,

$X^{k=1}(T_j) = \frac{\dot{Q}_c^{k=2}(T_j) - BL(T_j)}{\dot{Q}_c^{k=2}(T_j) - \dot{Q}_c^{k=1}(T_j)}$ the cooling mode, low capacity load factor for temperature bin j, dimensionless.

$X^{k=2}(T_j) = 1 - X^{k=1}(T_j)$, the cooling mode, high capacity load factor for temperature bin j, dimensionless.

Obtain the fractional bin hours for the cooling season, n_j/N, from Table 18. Use Equations 4.1.3–1 and 4.1.3–2, respectively, to evaluate $\dot{Q}_c^{k=1}(T_j)$ and $\dot{E}_c^{k=1}(T_j)$. Use Equations 4.1.3–3 and 4.1.3–4, respectively, to evaluate $\dot{Q}_c^{k=2}(T_j)$ and $\dot{E}_c^{k=2}(T_j)$.

4.1.3.3 Unit only operates at high (k=2) compressor capacity at temperature T_j and its capacity is greater than the building cooling load, $BL(T_j) < \dot{Q}_c^{k=2}(T_j)$. This section applies to units that lock out low compressor capacity operation at higher outdoor temperatures.

$$\frac{q_c(T_j)}{N} = X^{k=2}(T_j) * \dot{Q}_c^{k=2}(T_j) * \frac{n_j}{N} \qquad \frac{e_c(T_j)}{N} = \frac{X^{k=2}(T_j) * \dot{E}_c^{k=2}(T_j)}{PLF_j} * \frac{n_j}{N}$$

where,

$X^{k=2}(T_j) = BL(T_j)/\dot{Q}_c^{k=2}(T_j)$, the cooling mode high capacity load factor for temperature bin j, dimensionless.

$PLF_j = 1 - C_D^{(k=2)} * [1 - X^{k=2}(T_j)]$, the part load factor, dimensionless.

Obtain the fraction bin hours for the cooling season, $\frac{n_j}{N}$, from Table 18. Use Equations 4.1.3-3 and 4.1.3-4, respectively, to evaluate $\dot{Q}_c^{k=2}(T_j)$ and $\dot{E}_c^{k=2}(T_j)$.

4.1.3.4 Unit must operate continuously at high (k=2) compressor capacity at temperature T_j, $BL(T_j) \geq \dot{Q}_c^{k=2}(T_j)$.

$$\frac{q_c(T_j)}{N} = \dot{Q}_c^{k=2}(T_j) * \frac{n_j}{N} \qquad \frac{e_c(T_j)}{N} = \dot{E}_c^{k=2}(T_j) * \frac{n_j}{N}$$

Obtain the fractional bin hours for the cooling season, n_j/N, from Table 18. Use Equations 4.1.3–3 and 4.1.3–4, respectively, to evaluate $\dot{Q}_c^{k=2}(T_j)$ and $\dot{E}_c^{k=2}(T_j)$.

4.1.4 SEER calculations for an air conditioner or heat pump having a variable-speed compressor. Calculate SEER using Equation 4.1–1. Evaluate the space cooling capacity, $\dot{Q}_c^{k=1}(T_j)$, and electrical power consumption, $\dot{E}_c^{k=1}(T_j)$, of the test unit when operating at minimum compressor speed and outdoor temperature T_j. Use,

Equation 4.1.4-1 $$\dot{Q}_c^{k=1}(T_j) = \dot{Q}_c^{k=1}(67) + \frac{\dot{Q}_c^{k=1}(82) - \dot{Q}_c^{k=1}(67)}{82-67} * (T_j - 67)$$

Equation 4.1.4-2 $$\dot{E}_c^{k=1}(T_j) = \dot{E}_c^{k=1}(67) + \frac{\dot{E}_c^{k=1}(82) - \dot{E}_c^{k=1}(67)}{82-67} * (T_j - 67)$$

where $\dot{Q}_c^{k=1}(82)$ and $\dot{E}_c^{k=1}(82)$ are determined from the B_1 Test, $\dot{Q}_c^{k=1}(67)$ and $\dot{E}_c^{k=1}(67)$ are determined from the F1 Test, and all four quantities are calculated as specified in section 3.3. Evaluate the space cooling capacity, $\dot{Q}_c^{k=2}(T_j)$, and electrical power consumption, $\dot{E}_c^{k=2}(T_j)$, of the test unit when operating at maximum compressor speed and outdoor temperature T_j. Use Equations 4.1.3–3 and 4.1.3–4, respectively, where $\dot{Q}_c^{k=2}(95)$ and $\dot{E}_c^{k=2}(95)$ are determined from the A_2 Test, $\dot{Q}_c^{k=2}(82)$ and $\dot{E}_c^{k=2}(82)$ are determined from the B_2 Test, and all four quantities are calculated as specified in section 3.3. Calculate the space cooling capacity, $\dot{Q}_c^{k=v}(T_j)$, and electrical power consumption, $\dot{E}_c^{k=v}(T_j)$, of the test unit when operating at outdoor temperature T_j and the intermediate compressor speed used during the section 3.2.4 (and Table 7) E_V Test using,

$$M_Q = \left[\frac{\dot{Q}_c^{k=1}(82) - \dot{Q}_c^{k=1}(67)}{82-67} * (1 - N_Q)\right] + \left[N_Q * \frac{\dot{Q}_c^{k=2}(95) - \dot{Q}_c^{k=2}(82)}{95-82}\right]$$

$$M_E = \left[\frac{\dot{E}_c^{k=1}(82) - \dot{E}_c^{k=1}(67)}{82-67} * (1 - N_E)\right] + \left[N_E * \frac{\dot{E}_c^{k=2}(95) - \dot{E}_c^{k=2}(82)}{95-82}\right]$$

4.1.4.1 Steady-state space cooling capacity when operating at minimum compressor speed is greater than or equal to the building cooling load at temperature T_j, $\dot{Q}_c^{k=1}(T_j) \geq BL(T_j)$.

$$\frac{q_c(T_j)}{N} = X^{k=1}(T_j) * \dot{Q}_c^{k=1}(T_j) * \frac{n_j}{N} \qquad \frac{e_c(T_j)}{N} = \frac{X^{k=1}(T_j) * \dot{E}_c^{k=1}(T_j)}{PLF_j} * \frac{n_j}{N}$$

where,

$X^{k=1}(T_j) = BL(T_j)/\dot{Q}_c^{k=1}(T_j)$, the cooling mode minimum speed load factor for temperature bin j, dimensionless.

$PLF_j = 1 - C_D^c \cdot [1 - X^{k=1}(T_j)]$, the part load factor, dimensionless.

n_j/N, the fractional bin hours for the cooling season; the ratio of the number of hours during the cooling season when the outdoor temperature fell within the range represented by bin temperature T_j to the total number of hours in the cooling season, dimensionless.

Obtain the fractional bin hours for the cooling season, n_j/N, from Table 18. Use Equations 4.1.3–1 and 4.1.3–2, respectively, to evaluate $\dot{Q}_c^{k=l}(T_j)$ and $\dot{E}_c^{k=l}(T_j)$.

4.1.4.2 Unit operates at an intermediate compressor speed (k=i) in order to match the building cooling load at temperature T_j, $\dot{Q}_c^{k=1}(T_j) < BL(T_j) < \dot{Q}_c^{k=2}(T_j)$.

$$\frac{q_c(T_j)}{N} = \dot{Q}_c^{k=1}(T_j) * \frac{n_j}{N} \qquad \frac{e_c(T_j)}{N} = \dot{E}_c^{k=1}(T_j) * \frac{n_j}{N}$$

where,

$\dot{Q}_c^{k=i}(T_j) = BL(T_j)$, the space cooling capacity delivered by the unit in matching the building load at temperature T_j, Btu/h.

The matching occurs with the unit operating at compressor speed k = i.

$\dot{E}_c^{k=1}(T_j) = \frac{\dot{Q}_c^{k=1}(T_j)}{EER^{k=1}(T_j)}$ the electrical power input required by the test unit when operating at a compressor speed of k = i and temperature T_j, W.

$EER^{k=i}(T_j)$ = the steady-state energy efficiency ratio of the test unit when operating at a compressor speed of k = i and temperature T_j, Btu/h per W.

Obtain the fractional bin hours for the cooling season, n_j/N, from Table 18. For each temperature bin where the unit operates at an intermediate compressor speed, determine the energy efficiency ratio $EER^{k=i}(T_j)$ using,

$EER^{k=i}(T_j) = A + B \cdot T_j + C \cdot T_j^2$.

For each unit, determine the coefficients A, B, and C by conducting the following calculations once:

$$D = \frac{T_2^2 - T_1^2}{T_v^2 - T_1^2} \qquad B = \frac{EER^{k=1}(T_1) - EER^{k=2}(T_2) - D*[EER^{k=1}(T_1) - EER^{k=v}(T_v)]}{T_1 - T_2 - D*(T_1 - T_v)}$$

$$C = \frac{EER^{k=1}(T_1) - EER^{k=2}(T_2) - B*(T_1 - T_2)}{T_1^2 - T_2^2} \qquad A = EER^{k=1}(T_2) - B*T_2 - C*T_2^2$$

where,

T_1 = the outdoor temperature at which the unit, when operating at minimum compressor speed, provides a space cooling capacity that is equal to the building load ($\dot{Q}_c^{k=1}(T_1) = BL(T_1)$), °F. Determine T_1 by equating Equations 4.1.3–1 and 4.1–2 and solving for outdoor temperature.

T_v = the outdoor temperature at which the unit, when operating at the intermediate compressor speed used during the section 3.2.4 E_V Test, provides a space cooling capacity that is equal to the building load ($\dot{Q}_c^{k=v}(T_v) = BL(T_v)$), °F. Determine T_v by equating Equations 4.1.4–1 and 4.1–2 and solving for outdoor temperature.

T_2 = the outdoor temperature at which the unit, when operating at maximum compressor speed, provides a space cooling capacity that is equal to the building load ($\dot{Q}_c^{k=2}(T_2) = BL(T_2)$), °F. Determine T_2 by equating Equations 4.1.3–3 and 4.1–2 and solving for outdoor temperature.

$$EER^{k=1}(T_1) = \frac{\dot{Q}_c^{k=1}(T_j)[Eqn. 4.1.4-1, substituting\ T_1\ for\ T_j]}{\dot{E}_c^{k=1}(T_j)[Eqn. 4.1.4-2, substituting\ T_1\ for\ T_j]}, Btu/h \text{ per } W$$

$$EER^{k=v}(T_v) = \frac{\dot{Q}_c^{k=v}(T_v)[Eqn. 4.1.4-3, substituting\ T_v\ for\ T_j]}{\dot{E}_c^{k=v}(T_v)[Eqn. 4.1.4-4, substituting\ T_v\ for\ T_j]}, Btu/h \text{ per } W$$

$$EER^{k=2}(T_2) = \frac{\dot{Q}_c^{k=2}(T_2)[Eqn. 4.1.3-3, substituting\ T_2\ for\ T_j]}{\dot{E}_c^{k=2}(T_2)[Eqn. 4.1.3-4, substituting\ T_2\ for\ T_j]}, Btu/h \text{ per } W$$

4.1.4.3 Unit must operate continuously at maximum (k=2) compressor speed at temperature Tj, $BL(T_j) \geq \dot{Q}_c^{k=2}(T_j)$. Evaluate the Equation 4.1–1 quantities

$$\frac{q_c(T_j)}{N} \text{ and } \frac{e_c(T_j)}{N}$$

as specified in section 4.1.3.4 with the understanding that $\dot{Q}_c^{k=2}(T_j)$ and $\dot{E}_c^{k=2}(T_j)$ correspond to maximum compressor speed operation and are derived from the results of the tests specified in section 3.2.4.

4.1.5 SEER calculations for an air conditioner or heat pump having a single indoor unit with multiple blowers. Calculate SEER using Eq. 4.1–1, where $q_c(Tj)/N$ and $e_c(Tj)/N$ are evaluated as specified in applicable below subsection.

4.1.5.1 For multiple blower systems that are connected to a lone, single-speed outdoor unit. a. Calculate the space cooling capacity, $\dot{Q}_c^{k=1}(T_j)$, and electrical power consumption, $\dot{E}_c^{k=1}(T_j)$, of the test unit when operating at the cooling minimum air volume rate and outdoor temperature T_j using the equations given in section 4.1.2.1. Calculate the space cooling capacity, $\dot{Q}_c^{k=2}(T_j)$, and electrical power consumption, $\dot{E}_c^{k=2}(T_j)$, of the test unit when operating at the cooling full-load air volume rate and outdoor temperature T_j using the equations given in section 4.1.2.1. In evaluating the section 4.1.2.1 equations, determine the quantities $\dot{Q}_c^{k=1}(82)$ and $\dot{E}_c^{k=1}(82)$ from the B1 Test, $\dot{Q}_c^{k=1}(95)$ and $\dot{E}_c^{k=1}(95)$ from the Al Test, $\dot{Q}_c^{k=2}(82)$ and $\dot{E}_c^{k=2}(82)$ from the B2 Test, and $\dot{Q}_c^{k=2}(95)$ and $\dot{E}_c^{k=2}(95)$ from the A2 Test. Evaluate all eight quantities as specified in section 3.3. Refer to section 3.2.2.1 and Table 5 for additional information on the four referenced laboratory tests. b. Determine the cooling mode cyclic degradation coefficient, CD_c, as per sections 3.2.2.1 and 3.5 to 3.5.3. Assign this same value to CD_c(K=2). c. Except for using the above values of $\dot{Q}_c^{k=1}(T_j)$, $\dot{E}_c^{k=1}(T_j)$, $\dot{E}_c^{k=2}(T_j)$, $\dot{Q}_c^{k=2}(T_j)$, CD_c, and CD_c (K=2), calculate the quantities $q_c(T_j)/N$ and $e_c(T_j)/N$ as specified in section 4.1.3.1 for cases where $\dot{Q}_c^{k=1}(T_j) \geq BL(T_j)$. For all other outdoor bin temperatures, T_j, calculate $q_c(Tj)/N$ and $e_c(Tj)/N$ as specified in section 4.1.3.3 if $\dot{Q}_c^{k=2}(T_j) > BL(T_j)$ or as specified in section 4.1.3.4 if $\dot{Q}_c^{k=2}(T_j) \leq BL(T_j)$.

4.1.5.2 For multiple blower systems that are connected to either a lone outdoor unit having a two-capacity compressor or to two separate but identical model single-speed outdoor units. Calculate the quantities $q_c(Tj)/N$ and $e_c(Tj)/N$ as specified in section 4.1.3.

4.2 Heating Seasonal Performance Factor (HSPF) Calculations.

Unless an approved alternative efficiency determination method is used, as set forth in 10 CFR 429.70(e), HSPF must be calculated as follows: Six generalized climatic regions are depicted in Figure 1 and otherwise defined in Table 19. For each of these regions and for each applicable standardized design heating requirement, evaluate the heating seasonal performance factor using, Equation 4.2-1 $$HSPF = \frac{\sum_j^J n_j * BL(T_j)}{\sum_j^J e_h(T_j) + \sum_j^J RH(T_j)} * F_{def} = \frac{\sum_j^J \left[\frac{n_j}{N} * BL(T_j)\right]}{\sum_j^J \frac{e_h(T_j)}{N} + \sum_j^J \frac{RH(T_j)}{N}} * F_{def}$$

Where,

$e_h(T_j)/N$, the ratio of the electrical energy consumed by the heat pump during periods of the space heating season when the outdoor temperature fell within the range represented by bin temperature T_j to the total number of hours in the heating season (N), W. For heat pumps having a heat comfort controller, this ratio may also include electrical energy used by resistive elements to maintain a minimum air delivery temperature (see 4.2.5).

$RH(T_j)/N$, the ratio of the electrical energy used for resistive space heating during periods when the outdoor temperature fell within the range represented by bin temperature T_j to the total number of hours in the heating season (N), W. Except as noted in section 4.2.5, resistive space heating is modeled as being used to meet that portion of the building load that the heat pump does not meet because of insufficient capacity or because the heat pump automatically turns off at the lowest outdoor temperatures. For heat pumps having a heat comfort controller, all or part of the electrical energy used by resistive heaters at a particular bin temperature may be reflected in $e_h(T_j)/N$ (see 4.2.5).

T_j, the outdoor bin temperature, °F. Outdoor temperatures are ''binned'' such that calculations are only performed based one temperature within the bin. Bins of 5 °F are used.

n_j/N, the fractional bin hours for the heating season; the ratio of the number of hours during the heating season when the outdoor temperature fell within the range represented by bin temperature T_j to the total number of hours in the heating season, dimensionless.

Obtain n_j/N values from Table 19.

j, the bin number, dimensionless.

J, for each generalized climatic region, the total number of temperature bins, dimensionless. Referring to Table 19, J is the highest bin number (j) having a nonzero entry for the fractional bin hours for the generalized climatic region of interest.

F_{def}, the demand defrost credit described in section 3.9.2, dimensionless.

$BL(T_j)$, the building space conditioning load corresponding to an outdoor temperature of

T_j; the heating season building load also depends on the generalized climatic region's outdoor design temperature and the design heating requirement, Btu/h.

TABLE 19—GENERALIZED CLIMATIC REGION INFORMATION

Region number	I	II	III	IV	V	VI
Heating Load Hours	562	909	1,363	1,701	2,202	1,974 *
Outdoor Design Temperature, T_{OD}	37	27	17	5	−10	30
Zero Load Temperature, T_{ZL}	60	58	57	55	55	58
j T_j (°F)	Fractional Bin Hours, n_j/N					
1 62	.291	.215	.153	.132	.106	.113
2 57	.239	.189	.142	.111	.092	.206
3 52	.194	.163	.138	.103	.086	.215
4 47	.129	.143	.137	.093	.076	.204
5 42	.081	.112	.135	.100	.078	.141
6 37	.041	.088	.118	.109	.087	.076
7 32	.019	.056	.092	.126	.102	.034
8 27	.005	.024	.047	.087	.094	.008
9 22	.001	.008	.021	.055	.074	.003
10 17	0	.002	.009	.036	.055	0
11 12	0	0	.005	.026	.047	0
12 7	0	0	.002	.013	.038	0
13 2	0	0	.001	.006	.029	0
14 −3	0	0	0	.002	.018	0
15 −8	0	0	0	.001	.010	0
16 −13	0	0	0	0	.005	0
17 −18	0	0	0	0	.002	0
18 −23	0	0	0	0	.001	0

* Pacific Coast Region.

Evaluate the building heating load using

Equation 4.2-2 $$BL(T_j) = \frac{(T_{zl} - T_j)}{T_{zl} - T_{OD}} * DHR$$

where,

T_{OD}, the outdoor design temperature, °F. An outdoor design temperature is specified for each generalized climatic region in Table 19.

DHR, the design heating requirement (see section 1.2, Definitions), Btu/h.

T_{zl}, the zero load temperature, °F

Calculate the design heating requirements for each generalized climatic region as follows:

For a heat pump that delivers both cooling and heating,

$$DHR = \dot{Q}_c^{k=2}(95) * C * \frac{T_{zl} - T_{OD}}{T_{zl} - 5}$$

where,

C = 1.3, a multiplier to provide the appropriate slope for the heating load line, dimensionless.

T_{zl}, the zero load temperature, °F

$\dot{Q}_c^{k=2}(95)$, the space cooling capacity of the unit as determined from the A or A_2 Test, whichever applies, Btu/h.

For a heating-only heat pump,

$$DHR = \dot{Q}_h^k(47) * C * \frac{T_{zl} - T_{OD}}{T_{zl} - 5}$$

where,

C = 1.3, a multiplier to provide the appropriate slope for the heating load line, dimensionless.

T_{zl}, the zero load temperature, °F

$\dot{Q}_h^k(47)$, expressed in units of Btu/h and otherwise defined as follows:

1. For a single-speed heating only heat pump tested as per section 3.6.1, $\dot{Q}_h^k(47) = \dot{Q}_h(47)$, the space heating capacity determined from the H1 Test.

2. For a variable-speed heating only heat pump, a section 3.6.2 single-speed heating only heat pump, or a two-capacity heating only heat pump, $\dot{Q}_h^k(47) = \dot{Q}_h^{k=2}(47)$, the space heating capacity determined from the $H1_2$ Test.

For all heat pumps, HSPF accounts for the heating delivered and the energy consumed by auxiliary resistive elements when operating below the balance point. This condition occurs when the building load exceeds the space heating capacity of the heat pump condenser. For HSPF calculations for all heat pumps, see either section 4.2.1, 4.2.2, 4.2.3, or 4.2.4, whichever applies.

For heat pumps with heat comfort controllers (see section 1.2, Definitions), HSPF also accounts for resistive heating contributed when operating above the heat-pump-plus-comfort-controller balance point as a result of maintaining a minimum supply temperature. For heat pumps having a heat comfort controller, see section 4.2.5 for the additional steps required for calculating the HSPF.

4.2.1 Additional steps for calculating the HSPF of a heat pump having a single-speed compressor that was tested with a fixed-speed indoor blower installed, a constant-air-volume-rate indoor blower installed, or with no indoor blower installed.

Equation 4.2.1-1 $$\frac{e_h(T_j)}{N} = \frac{X(T_j) * \dot{E}_h(T_j) * \delta(T_j)}{PLF_j} * \frac{n_j}{N}$$

Equation 4.2.1-2 $$\frac{RH(T_j)}{N} = \frac{BL(T_j) - [X(T_j) * \dot{Q}_h(T_j) * \delta(T_j)]}{3.413 \frac{Btu/h}{W}} * \frac{n_j}{N}$$

where,

$$X(T_j) = \begin{Bmatrix} BL(T_j)/\dot{Q}_h(T_j) \\ or \\ 1 \end{Bmatrix}$$

whichever is less; the heating mode load factor for temperature bin j, dimensionless.

$\dot{Q}_h(T_j)$, the space heating capacity of the heat pump when operating at outdoor temperature T_j, Btu/h.

$\dot{E}_h(T_j)$, the electrical power consumption of the heat pump when operating at outdoor temperature T_j, W.

$\delta(T_j)$, the heat pump low temperature cut-out factor, dimensionless.

$PLF_j = 1 - C_D^h \cdot [1 - X(T_j)]$, the part load factor, dimensionless.

Use Equation 4.2–2 to determine $BL(T_j)$. Obtain fractional bin hours for the heating season, n_j/N, from Table 19.

Determine the low temperature cut-out factor using

Equation 4.2.1-3 $$\delta(T_j) = \begin{Bmatrix} 0, if\ T_j \le T_{off}\ and\ \frac{\dot{Q}_h(T_j)}{3.413 * \dot{E}_h(T_j)} < 1 \\ 1/2, if\ T_{off} < T_j \le T_{on}\ and\ \frac{\dot{Q}_h(T_j)}{3.413 * \dot{E}_h(T_j)} \ge 1 \\ 1, if\ T_j > T_{on}\ and\ \frac{\dot{Q}_h(T_j)}{3.413 * \dot{E}_h(T_j)} \ge 1 \end{Bmatrix}$$

where,

T_{off}, the outdoor temperature when the compressor is automatically shut off, °F. (If no such temperature exists, T_j is always greater than T_{off} and T_{on}).

T_{on}, the outdoor temperature when the compressor is automatically turned back on, if applicable, following an automatic shut-off, °F.

Calculate $\dot{Q}_h(T_j)$ and $\dot{E}_h(T_j)$ using,

Equation 4.2.1-4

$$\dot{Q}_h(T_j) = \begin{cases} \dot{Q}_h(17) + \frac{[\dot{Q}_h(47) - \dot{Q}_h(17)] * (T_j - 17)}{47 - 17}, & if\ T_j \geq 45\text{ °F} \ or\ T_j \leq 17\text{ °F} \\ \dot{Q}_h(17) + \frac{[\dot{Q}_h(35) - \dot{Q}_h(17)] * (T_j - 17)}{35 - 17}, & if\ 17\text{ °F} < T_j < 45\text{ °F} \end{cases}$$

Equation 4.2.1-5

$$\dot{E}_h(T_j) = \begin{cases} \dot{E}_h(17) + \frac{[\dot{E}_h(47) - \dot{E}_h(17)] * (T_j - 17)}{47 - 17}, & if\ T_j \geq 45\text{ °F} \ or\ T_j \leq 17\text{ °F} \\ \dot{E}_h(17) + \frac{[\dot{E}_h(35) - \dot{E}_h(17)] * (T_j - 17)}{35 - 17}, & if\ 17\text{ °F} < T_j < 45\text{ °F} \end{cases}$$

where,

$\dot{Q}_h(47)$ and $\dot{E}_h(47)$ are determined from the H1 Test and calculated as specified in section 3.7

$\dot{Q}_h(35)$ and $\dot{E}_h(35)$ are determined from the H2 Test and calculated as specified in section 3.9.1

$\dot{Q}_h(17)$ and $\dot{E}_h(17)$ are determined from the H3 Test and calculated as specified in section 3.10.

4.2.2 Additional steps for calculating the HSPF of a heat pump having a single-speed compressor and a variable-speed, variable-air-volume-rate indoor blower. The manufacturer must provide information about how the indoor air volume rate or the indoor blower speed varies over the outdoor temperature range of 65 °F to −23 °F. Calculate the quantities

$$\frac{e_h(T_j)}{N} \text{ and } \frac{RH(T_j)}{N}$$

in Equation 4.2–1 as specified in section 4.2.1 with the exception of replacing references to the H1C Test and section 3.6.1 with the $H1C_1$ Test and section 3.6.2. In addition, evaluate the space heating capacity and electrical power consumption of the heat pump $\dot{Q}_h(T_j)$ and $\dot{E}_h(T_j)$ using

Equation 4.2.2-1 $$\dot{Q}_h(T_j) = \dot{Q}_h^{k=1}(T_j) + \frac{\dot{Q}_h^{k=2}(T_j) - \dot{Q}_h^{k=1}(T_j)}{\mathrm{FP}_h^{k=2} - \mathrm{FP}_h^{k=1}} * [\mathrm{FP}_h(T_j) - \mathrm{FP}_h^{k=1}]$$

Equation 4.2.2-2 $$\dot{E}_h(T_j) = \dot{E}_h^{k=1}(T_j) + \frac{\dot{E}_h^{k=2}(T_j) - \dot{E}_h^{k=1}(T_j)}{\mathrm{FP}_h^{k=2} - \mathrm{FP}_h^{k=1}} * [\mathrm{FP}_h(T_j) - \mathrm{FP}_h^{k=1}]$$

where the space heating capacity and electrical power consumption at both low capacity (k=1) and high capacity (k=2) at outdoor temperature Tj are determined using

Equation 4.2.2-3

$$\dot{Q}_h^k(T_j) = \begin{cases} \dot{Q}_h^k(17) + \frac{[\dot{Q}_h^k(47) - \dot{Q}_h^k(17)] * (T_j - 17)}{47 - 17}, & if\ T_j \geq 45\text{ °F} \ or\ T_j \leq 17\text{ °F} \\ \dot{Q}_h^k(17) + \frac{[\dot{Q}_h^k(35) - \dot{Q}_h^k(17)] * (T_j - 17)}{35 - 17}, & if\ 17\text{ °F} < T_j < 45\text{ °F} \end{cases}$$

Equation 4.2.2-4

$$\dot{E}_h^k(T_j) = \begin{cases} \dot{E}_h^k(17) + \frac{[\dot{E}_h^k(47) - \dot{E}_h^k(17)] * (T_j - 17)}{47 - 17}, & if\ T_j \geq 45\text{ °F} \ or\ T_j \leq 17\text{ °F} \\ \dot{E}_h^k(17) + \frac{[\dot{E}_h^k(35) - \dot{E}_h^k(17)] * (T_j - 17)}{35 - 17}, & if\ 17\text{ °F} < T_j < 45\text{ °F} \end{cases}$$

For units where indoor blower speed is the primary control variable, $FP_h^{k=1}$ denotes the fan speed used during the required $H1_1$ and $H3_1$ Tests (see Table 11), $FP_h^{k=2}$ denotes the fan speed used during the required $H1_2$, $H2_2$, and $H3_2$ Tests, and $FP_h(T_j)$ denotes the fan speed used by the unit when the outdoor temperature equals T_j. For units where indoor air volume rate is the primary control variable, the three FP_h's are similarly defined only now being expressed in terms of air volume rates rather than fan speeds. Determine $\dot{Q}_h^{k=1}(47)$ and $\dot{E}_h^{k=1}(47)$ from the $H1_1$ Test, and $\dot{Q}_h^{k=2}(47)$ and $\dot{E}_h^{k=2}(47)$ from the $H1_2$ Test. Calculate all four quantities as specified in section 3.7. Determine $\dot{Q}_h^{k=1}(35)$ and $\dot{E}_h^{k=1}(35)$ as specified in section 3.6.2; determine $\dot{Q}_h^{k=2}(35)$ and $\dot{E}_h^{k=2}(35)$ and from the $H2_2$ Test and the calculation specified in section 3.9. Determine $\dot{Q}_h^{k=1}(17)$ and $\dot{E}_h^{k=1}(17$ from the $H3_1$ Test, and $\dot{Q}_h^{k=2}(17)$ and

$\dot{E}_h^{k=2}(17)$ from the $H3_2$ Test. Calculate all four quantities as specified in section 3.10.

4.2.3 Additional steps for calculating the HSPF of a heat pump having a two-capacity compressor. The calculation of the Equation 4.2–1 quantities differ depending upon whether the heat pump would operate at low capacity (section 4.2.3.1), cycle between low and high capacity (Section 4.2.3.2), or operate at high capacity (sections 4.2.3.3 and 4.2.3.4) in responding to the building load. For heat pumps that lock out low capacity operation at low outdoor temperatures, the manufacturer must supply information regarding the cutoff temperature(s) so that the appropriate equations can be selected.

$$\frac{e_h(T_j)}{N} \text{ and } \frac{RH(T_j)}{N}$$

a. Evaluate the space heating capacity and electrical power consumption of the heat pump when operating at low compressor capacity and outdoor temperature T_j using

$$\dot{Q}_h^{k=1}(T_j) = \begin{cases} \dot{Q}_h^{k=1}(47) + \frac{\left[\dot{Q}_h^{k=1}(62) - \dot{Q}_h^{k=1}(47)\right] * (T_j - 47)}{62 - 47}, & if\ T_j \geq 40\ ^\circ\text{F} \\ \dot{Q}_h^{k=1}(17) + \frac{\left[\dot{Q}_h^{k=1}(35) - \dot{Q}_h^{k=1}(17)\right] * (T_j - 17)}{35 - 17}, & if\ 17\ ^\circ\text{F} \leq T_j < 40\ ^\circ\text{F} \\ \dot{Q}_h^{k=1}(17) + \frac{\left[\dot{Q}_h^{k=1}(47) - \dot{Q}_h^{k=1}(17)\right] * (T_j - 17)}{47 - 17}, & if\ T_j < 17\ ^\circ\text{F} \end{cases}$$

$$\dot{E}_h^{k=1}(T_j) = \begin{cases} \dot{E}_h^{k=1}(47) + \frac{\left[\dot{E}_h^{k=1}(62) - \dot{E}_h^{k=1}(47)\right] * (T_j - 47)}{62 - 47}, & if\ T_j \geq 40\ ^\circ\text{F} \\ \dot{E}_h^{k=1}(17) + \frac{\left[\dot{E}_h^{k=1}(35) - \dot{E}_h^{k=1}(17)\right] * (T_j - 17)}{35 - 17}, & if\ 17\ ^\circ\text{F} \leq T_j < 40\ ^\circ\text{F} \\ \dot{E}_h^{k=1}(17) + \frac{\left[\dot{E}_h^{k=1}(47) - \dot{E}_h^{k=1}(17)\right] * (T_j - 17)}{47 - 17}, & if\ T_j < 17\ ^\circ\text{F} \end{cases}$$

b. Evaluate the space heating capacity and electrical power consumption ($\dot{Q}_h^{k=2}(T_j)$ and $\dot{E}_h^{k=2}(T_j)$) of the heat pump when operating at high compressor capacity and outdoor temperature Tj by solving Equations 4.2.2–3 and 4.2.2–4, respectively, for k=2. Determine $\dot{Q}_h^{k=1}(62)$ and $\dot{E}_h^{k=1}(62)$ from the $H0_1$ Test, $\dot{Q}_h^{k=1}(47)$ and $\dot{E}_h^{k=1}(47)$ from the $H1_1$ Test, and $\dot{Q}_h^{k=2}(47)$ and $\dot{E}_h^{k=2}(47)$ from the $H1_2$ Test. Calculate all six quantities as specified in section 3.7. Determine $\dot{Q}_h^{k=2}(35)$ and $\dot{E}_h^{k=2}(35)$ from the $H2_2$ Test and, if required as described in section 3.6.3, determine $\dot{Q}_h^{k=1}(35)$ and $\dot{E}_h^{k=1}(35)$ from the $H2_1$ Test. Calculate the required 35 °F quantities as specified in section 3.9. Determine $\dot{Q}_h^{k=2}(17)$ and $\dot{E}_h^{k=2}(17)$ from the $H3_2$ Test and, if required as described in section 3.6.3, determine $\dot{Q}_h^{k=1}(17)$ and $\dot{E}_h^{k=1}(17)$ from the $H3_1$ Test. Calculate the required 17 °F quantities as specified in section 3.10.

4.2.3.1 Steady-state space heating capacity when operating at low compressor capacity is greater than or equal to the building heating load at temperature T_j, $\dot{Q}_h^{k=1}(T_j) \geq BL(T_j)$.

$$\text{Equation 4.2.3-1} \quad \frac{e_h(T_j)}{N} = \frac{X^{k=1}(T_j) * \dot{E}_h^{k=1}(T_j) * \delta(T_j)}{PLF_j} * \frac{n_j}{N}$$

$$\text{Equation 4.2.3-2} \quad \frac{RH(T_j)}{N} = \frac{BL(T_j) * [1 - \delta(T_j)]}{3.413 \frac{Btu/h}{W}} * \frac{n_j}{N}$$

Where,

$X^{k=1}(T_j) = BL(T_j)/\dot{Q}_h^{k=1}(T_j)$, the heating mode low capacity load factor for temperature bin *j,* dimensionless.

$PLF_j = 1 - C_D^h \cdot [\ 1 - X^{k=1}(T_j)\ ]$, the part load factor, dimensionless.

$\delta'(T_j)$, the low temperature cutoff factor, dimensionless.

Determine the low temperature cut-out factor using

$$\delta(T_j) = \begin{cases} 0, & if\ T_j \leq T_{off} \\ 1/2, & if\ T_{off} < T_j \leq T_{on} \\ 1, & if\ T_j > T_{on} \end{cases}$$

Where,

T_{off} and T_{on} are defined in section 4.2.1. Use the calculations given in section 4.2.3.3, and not the above, if:

(a) The heat pump locks out low capacity operation at low outdoor temperatures and

(b) T_j is below this lockout threshold temperature.

4.2.3.2 Heat pump alternates between high (k=2) and low (k=1) compressor capacity to satisfy the building heating load at a temperature T_j, $\dot{Q}_h^{k=1}(T_j) < BL(T_j) < \dot{Q}_h^{k=2}(T_j)$.

Calculate $\frac{RH(T_j)}{N}$ using Equation 4.2.3-2. Evaluate $\frac{e_h(T_j)}{N}$ using

$$\frac{e_h(T_j)}{N} = [X^{k=1}(T_j) * \dot{E}_h^{k=1}(T_j) + X^{k=2}(T_j) * \dot{E}_h^{k=2}(T_j)] * \delta(T_j) * \frac{n_j}{N}$$

Where,

$$X^{k=1}(T_j) = \frac{\dot{Q}_h^{k=2}(T_j) - BL(T_j)}{\dot{Q}_h^{k=2}(T_j) - \dot{Q}_h^{k=1}(T_j)}$$

$X^{k=2}(T_j) = 1 - X^{k=1}(T_j)$ the heating mode, high capacity load factor for temperature bin $_j$, dimensionless.

Determine the low temperature cut-out factor, $\delta'(T_j)$, using Equation 4.2.3–3.

4.2.3.3 Heat pump only operates at high (k=2) compressor capacity at temperature T_j and its capacity is greater than the building heating load, $BL(T_j) < \dot{Q}_h^{k=2}(T_j)$. This section applies to units that lock out low compressor capacity operation at low outdoor temperatures.

Calculate $\frac{RH(T_j)}{N}$ using Equation 4.2.3-2. Evaluate $\frac{e_h(T_j)}{N}$ using

$$\frac{e_h(T_j)}{N} = \frac{X^{k=2}(T_j) * \dot{E}_h^{k=2}(T_j) * \delta(T_j)}{PLF_j} * \frac{n_j}{N}$$

Where,

$X^{k=2}(T_j) = BL(T_j)/\dot{Q}_h^{k=2}(T_j)$.

$PLF_j = 1 - C_D^h(k = 2) * [1 - X^{k=2}(T_j)]$

Determine the low temperature cut-out factor, $\delta(T_j)$, using Equation 4.2.3–3.

4.2.3.4 Heat pump must operate continuously at high (k=2) compressor capacity at temperature T_j, $BL(T_j) \geq \dot{Q}_h^{k=2}(T_j)$.

$$\frac{e_h(T_j)}{N} = \dot{E}_h^{k=2}(T_j) * \delta'(T_j) * \frac{n_j}{N} \qquad \frac{RH(T_j)}{N} = \frac{BL(T_j) * [\dot{Q}_h^{k=2}(T_j) * \delta'(T_j)]}{3.413 \frac{Btu/h}{W}} * \frac{n_j}{N}$$

Where

$$\delta'(T_j) = \begin{cases} 0, & if\ T_j \leq T_{off}\ or\ \dfrac{\dot{Q}_h^{k=2}(T_j)}{3.413 * \dot{E}_h^{k=2}(T_j)} < 1 \\ 1/2, & if\ T_{off} < T_j \leq T_{on}\ and\ \dfrac{\dot{Q}_h^{k=2}(T_j)}{3.413 * \dot{E}_h^{k=2}(T_j)} \geq 1 \\ 1, & if\ T_j > T_{on}\ and\ \dfrac{\dot{Q}_h^{k=2}(T_j)}{3.413 * \dot{E}_h^{k=2}(T_j)} \geq 1 \end{cases}$$

4.2.4 Additional steps for calculating the HSPF of a heat pump having a variable-speed compressor. Calculate HSPF using Equation 4.2–1. Evaluate the space heating capacity, $\dot{Q}_h^{k=1}(T_j)$, and electrical power consumption, $\dot{E}_h^{k=1}(T_j)$, of the heat pump when operating at minimum compressor speed and outdoor temperature T_j using

$$\text{Equation 4.2.4-1} \quad \dot{Q}_h^{k=1}(T_j) = \dot{Q}_h^{k=1}(47) + \frac{\dot{Q}_h^{k=1}(62) - \dot{Q}_h^{k=1}(47)}{62-47} * (T_j - 47)$$

$$\text{Equation 4.2.4-2} \quad \dot{E}_h^{k=1}(T_j) = \dot{E}_h^{k=1}(47) + \frac{\dot{E}_h^{k=1}(62) - \dot{E}_h^{k=1}(47)}{62-47} * (T_j - 47)$$

Where,

$\dot{Q}_h^{k=1}(62)$ and $\dot{E}_h^{k=1}(62)$ are determined from the $H0_1$ Test

$\dot{Q}_h^{k=1}(47)$ and $\dot{E}_h^{k=1}(47)$ are determined from the $H1_1$ Test,

and all four quantities are calculated as specified in section 3.7.

Evaluate the space heating capacity, $\dot{Q}_h^{k=2}(T_j)$, and electrical power consumption, $\dot{E}_h^{k=2}(T_j)$, of the heat pump when operating at maximum compressor speed and outdoor temperature T_j by solving Equations 4.2.2–3 and 4.2.2–4, respectively, for k=2. Determine the Equation 4.2.2–3 and 4.2.2–4 quantities $\dot{Q}_h^{k=2}(47)$ and $\dot{E}_h^{k=2}(47)$ from the $H1_2$ Test and the calculations specified in section 3.7. Determine $\dot{Q}_h^{k=2}(35)$ and $\dot{E}_h^{k=2}(35)$ from the $H2_2$ Test and the calculations specified in section 3.9 or, if the $H2_2$ Test is not conducted, by conducting the calculations specified in section 3.6.4. Determine $\dot{Q}_h^{k=2}(17)$ and $\dot{E}_h^{k=2}(17)$ from the $H3_2$ Test and the calculations specified in section 3.10. If $H4_2$ test is conducted, evaluate the space heating capacity, $\dot{Q}_h^{k=2}(T_j)$, and electrical power consumption, $\dot{E}_h^{k=2}(T_j)$, of the heat pump when operating at maximum compressor speed and outdoor temperature T_j by using the following equation instead of Equations 4.2.2–3 and 4.2.2–4. Determine the quantities $\dot{Q}_h^{k=2}(T_l)$ and $\dot{E}_h^{k=2}(T_l)$ from the $H4_2$ Test and the calculations specified in section 3.7.

$$\dot{Q}_h^2(T_j) = \begin{cases} \dot{Q}_h^2(17) + \frac{[\dot{Q}_h^2(T_l) - \dot{Q}_h^2(17)]*(T_j-17)}{T_l-17}, & if\ T_j \geq 45\ °\text{F}\ or\ T_j \leq 17\ °\text{F} \\ \dot{Q}_h^2(17) + \frac{[\dot{Q}_h^2(35) - \dot{Q}_h^2(17)]*(T_j-17)}{35-17}, & if\ 17\ °\text{F} < T_j < 45\ °\text{F} \end{cases}$$

$$\dot{E}_h^2(T_j) = \begin{cases} \dot{E}_h^2(17) + \frac{[\dot{E}_h^2(T_l) - \dot{E}_h^2(17)]*(T_j-17)}{T_l-17}, & if\ T_j \geq 45\ °\text{F}\ or\ T_j \leq 17\ °\text{F} \\ \dot{E}_h^2(17) + \frac{[\dot{E}_h^2(35) - \dot{E}_h^2(17)]*(T_j-17)}{35-17}, & if\ 17\ °\text{F} < T_j < 45\ °\text{F} \end{cases}$$

Where T_l is the outdoor temperature where the $H4_2$ test is conducted.

Calculate the space heating capacity, $\dot{Q}_h^{k=v}(T_j)$, and electrical power consumption, $\dot{E}_h^{k=v}(T_j)$, of the heat pump when operating at outdoor temperature T_j and the intermediate compressor speed used during the section 3.6.4 $H2_V$ Test using

$$\dot{Q}_h^{k=v}(T_j) = \dot{Q}_h^{k=v}(35) + M_Q * (T_j - 35)$$

$$\dot{E}_h^{k=v}(T_j) = \dot{E}_h^{k=v}(35) + M_E * (T_j - 35)$$

Where,

$\dot{Q}_h^{k=v}(35)$ and $\dot{E}_h^{k=v}(35)$ are determined from the $H2_V$ Test and calculated as specified in section 3.9. Approximate the slopes of the k=v intermediate speed heating capacity and electrical power input curves, M_Q and M_E, as follows:

$$M_Q = \left[\frac{\dot{Q}_h^{k=1}(62) - \dot{Q}_h^{k=1}(47)}{62-47} * (1 - N_Q)\right] + \left[N_Q * \frac{\dot{Q}_h^{k=2}(35) - \dot{Q}_h^{k=2}(17)}{35-17}\right]$$

$$M_E = \left[\frac{\dot{E}_h^{k=1}(62) - \dot{E}_h^{k=1}(47)}{62-47} * (1 - N_E)\right] + \left[N_E * \frac{\dot{E}_h^{k=2}(35) - \dot{E}_h^{k=2}(17)}{35-17}\right]$$

where,

$$N_Q = \frac{\dot{Q}_h^{k=v}(35) - \dot{Q}_h^{k=1}(35)}{\dot{Q}_h^{k=2}(35) - \dot{Q}_h^{k=1}(35)} \qquad N_E = \frac{\dot{E}_h^{k=v}(35) - \dot{E}_h^{k=1}(35)}{\dot{E}_h^{k=2}(35) - \dot{E}_h^{k=1}(35)}$$

Use Equations 4.2.4–1 and 4.2.4–2, respectively, to calculate $\dot{Q}_h^{k=1}(35)$ and $\dot{E}_h^{k=1}(35)$. The calculation of Equation 4.2–1 quantities $e_h(T_j)/N$ and $RH(T_j)/N$ differs depending upon whether the heat pump would operate at minimum speed (section 4.2.4.1), operate at an intermediate speed (section 4.2.4.2), or operate at maximum speed (section 4.2.4.3) in responding to the building load.

4.2.4.1 Steady-state space heating capacity when operating at minimum compressor speed is greater than or equal to the building heating load at temperature T_j, $\dot{Q}_h^{k=1}(T_j \geq BL(T_j)$. Evaluate the Equation 4.2-1 quantities $\frac{e_h(T_j)}{N}$ and $\frac{RH(T_j)}{N}$ as specified in section 4.2.3.1. Except now use Equations 4.2.4-1 and 4.2.4-2 to evaluate $\dot{Q}_h^{k=1}(T_j)$ and $\dot{E}_h^{k=1}(T_j)$, respectively, and replace section 4.2.3.1 references to "low capacity" and section 3.6.3 with "minimum speed" and section 3.6.4. Also, the last sentence of section 4.2.3.1 does not apply.

4.2.4.2 Heat pump operates at an intermediate compressor speed (k=i) in order to match the building heating load at a temperature T_j, $\dot{Q}_h^{k=1}(T_j) < BL(T_j) < \dot{Q}_h^{k=2}(T_j)$. Calculate $\frac{RH(T_j)}{N}$ using Equation 4.2.3-2 while evaluating $\frac{e_h(T_j)}{N}$ using:

$$\frac{e_h(T_j)}{N} = \dot{E}_h^{k=1}(T_j) * \delta(T_j) * \frac{n_j}{N}$$

where,

$$\dot{E}_h^{k=1}(T_j) = \frac{\dot{Q}_h^{k=1}(T_j)}{3.413\frac{Btu/h}{W} * \ COP^{k=1}(T_j)}$$

and $\delta(T_j)$ is evaluated using Equation 4.2.3–3 while,

$\dot{Q}_h^{k=i}(T_j) = BL(T_j)$, the space heating capacity delivered by the unit in matching the building load at temperature (T_j), Btu/h. The matching occurs with the heat pump operating at compressor speed k=i.

$COP^{k=i}(T_j)$, the steady-state coefficient of performance of the heat pump when operating at compressor speed k=i and temperature T_j, dimensionless.

For each temperature bin where the heat pump operates at an intermediate compressor speed, determine $COP^{k=i}(T_j)$ using,

$COP^{k=i}(T_j) = A + B \cdot T_j + C \cdot T_j^2$.

For each heat pump, determine the coefficients A, B, and C by conducting the following calculations once:

$$D = \frac{T_3^2 - T_4^2}{T_{vh}^2 - T_4^2} \quad B = \frac{COP^{k=2}(T_4) - COP^{k=1}(T_3) - D * [COP^{k=2}(T_4) - COP^{k=v}(T_{vh})]}{T_4 - T_3 - D * (T_4 - T_{vh})}$$

Where,

T_3, the outdoor temperature at which the heat pump, when operating at minimum compressor speed, provides a space heating capacity that is equal to the building load ($\dot{Q}_h^{k=1}(T_3) = BL(T_3)$), °F.

Determine T_3 by equating Equations 4.2.4–1 and 4.2–2 and solving for outdoor temperature:

$$C = \frac{COP^{k=2}(T_4) - COP^{k=1}(T_3) - B * (T_4 - T_3)}{T_4^2 - T_3^2} \quad A = COP^{k=2}(T_4) - B * T_4 - C * T_4^2$$

T_{vh}, the outdoor temperature at which the heat pump, when operating at the intermediate compressor speed used during the section 3.6.4 $H2_V$ Test, provides a space heating capacity that is equal to the building load ($\dot{Q}_h^{k=v}(T_{vh}) = BL(T_{vh})$), °F. Determine T_{vh} by equating Equations 4.2.4–3 and 4.2–2 and solving for outdoor temperature.

T_4, the outdoor temperature at which the heat pump, when operating at maximum compressor speed, provides a space heating capacity that is equal to the building load ($\dot{Q}_h^{k=2}(T_4) = BL(T_4)$), °F.

Determine T_4 by equating Equations 4.2.2–3 (k=2) and 4.2–2 and solving for outdoor temperature.

$$COP^{k=1}(T_3) = \frac{\dot{Q}_h^{k=1}(T_3)\left[Eqn.\,4.2.4-1, substituting\ T_3\ for\ T_j\right]}{3.413\frac{Btu/h}{W} * \dot{E}_h^{k=1}(T_3)\left[Eqn.\,4.2.4-2, substituting\ T_3\ for\ T_j\right]}$$

$$COP^{k=v}(T_{vh}) = \frac{\dot{Q}_h^{k=v}(T_{vh})\left[Eqn.\,4.2.4-3, substituting\ T_{vh}\ for\ T_j\right]}{3.413\frac{Btu/h}{W} * \dot{E}_h^{k=v}(T_{vh})\left[Eqn.\,4.2.4-4, substituting\ T_{vh}\ for\ T_j\right]}$$

$$COP^{k=2}(T_4) = \frac{\dot{Q}_h^{k=2}(T_4)\left[Eqn.\,4.2.2-3, substituting\ T_4\ for\ T_j\right]}{3.413\frac{Btu/h}{W} * \dot{E}_h^{k=2}(T_4)\left[Eqn.\,4.2.2-4, substituting\ T_4\ for\ T_j\right]}$$

For multiple-split heat pumps (only), the following procedures supersede the above requirements for calculating $COP_h^{k=i}(T_j)$. For each temperature bin where $T_3 > T_j > T_{vh}$,

$$COP_h^{k=i}(T_j) = COP_h^{k=1}(T_3) + \frac{COP_h^{k=v}(T_{vh}) - COP_h^{k=1}(T_3)}{T_{vh} - T_3} * (T_j - T_3)$$

For each temperature bin where $T_{vh} \geq T_j > T_4$,

$$COP_h^{k=1}(T_j) = COP_h^{k=v}(T_{vh}) + \frac{COP_h^{k=2}(T_4) - COP_h^{k=v}(T_{vh})}{T_4 - T_{vh}} * (T_j - T_{vh})$$

4.2.4.3 Heat pump must operate continuously at maximum (k=2) compressor speed at temperature T_j, $BL(T_j) \geq \dot{Q}_h^{k=2}(T_j)$. Evaluate the Equation 4.2–1 quantities

$$\frac{RH(T_j)}{N} \text{ and } \frac{e_h(T_j)}{N}$$

as specified in section 4.2.3.4 with the understanding that $\dot{Q}_h^{k=2}(T_j)$ and $\dot{E}_h^{k=2}(T_j)$ correspond to maximum compressor speed operation and are derived from the results of the specified section 3.6.4 tests. If $H4_2$ test is conducted in place of $H1_2$, evaluate $\dot{Q}_h^{k=2}(T_j)$ and $\dot{E}_h^{k=2}(T_j)$ using the following equation instead of equations 4.2.2–3 and 4.2.2–4.

$$\dot{Q}_h^2(T_j) = \dot{Q}_h^2(T_L) + \frac{[\dot{Q}_h^2(17) - \dot{Q}_h^2(T_L)] \cdot (T_j - T_L)}{17 - T_L}$$

$$\dot{E}_h^2(T_j) = \dot{E}_h^2(T_L) + \frac{[\dot{E}_h^2(17) - \dot{E}_h^2(T_L)] \cdot (T_j - T_L)}{17 - T_L}$$

Where, T_L is the ambient dry bulb temperature where $H4_2$ test is conducted.

4.2.5 Heat pumps having a heat comfort controller. Heat pumps having heat comfort controllers, when set to maintain a typical minimum air delivery temperature, will cause the heat pump condenser to operate less because of a greater contribution from the resistive elements. With a conventional heat pump, resistive heating is only initiated if the heat pump condenser cannot meet the building load (*i.e.,* is delayed until a second stage call from the indoor thermostat). With a heat comfort controller, resistive heating can occur even though the heat pump condenser has adequate capacity to meet the building load (*i.e.,* both on during a first stage call from the indoor thermostat). As a result, the outdoor temperature where the heat pump compressor no longer cycles (*i.e.,* starts to run continuously), will be lower than if the heat pump did not have the heat comfort controller.

4.2.5.1 Heat pump having a heat comfort controller: additional steps for calculating the HSPF of a heat pump having a single-speed compressor that was tested with a fixed-speed indoor blower installed, a constant-air-volume-rate indoor blower installed, or with no indoor blower installed. Calculate the space heating capacity and electrical power of the heat pump without the heat comfort controller being active as specified in section 4.2.1 (Equations 4.2.1–4 and 4.2.1–5) for each outdoor bin temperature, T_j, that is listed in Table 19. Denote these capacities and electrical powers by using the subscript ''hp'' instead of ''h.'' Calculate the mass flow rate (expressed in pounds-mass of dry air per hour) and the specific heat of the indoor air (expressed in Btu/lbm_{da} · °F) from the results of the H1 Test using:

$$\dot{m}_{da} = \overline{\dot{V}_s} * 0.075\frac{lbm_{da}}{ft^3} * \frac{60_{min}}{hr} = \frac{\overline{\dot{V}}_{mx}}{v_n' * [1 + W_n]} * \frac{60_{min}}{hr} = \frac{\overline{\dot{V}}_{mx}}{v_n} * \frac{60_{min}}{hr}$$

Where $\overline{\dot{V}}_s$, $\overline{\dot{V}}_{mx}$, v'_n (or v_n), and W_n are defined following Equation 3–1. For each outdoor bin temperature listed in Table 19, calculate the nominal temperature of the air leaving the heat pump condenser coil using,

$$T_0(T_j) = 70°\text{F} + \frac{\dot{Q}_{hp}(T_j)}{\dot{m}_{da} * C_{p,da}}$$

Evaluate $e_h(T_j/N)$, $RH(T_j)/N$, $X(T_j)$, PLF_j, and $\delta(T_j)$ as specified in section 4.2.1. For each bin calculation, use the space heating capacity and electrical power from Case 1 or Case 2, whichever applies.

Case 1. For outdoor bin temperatures where $T_o(T_j)$ is equal to or greater than T_{CC} (the maximum supply temperature determined according to section 3.1.9), determine $\dot{Q}_h(T_j)$ and $\dot{E}_h(T_j)$ as specified in section 4.2.1 (*i.e.,* $\dot{Q}_h(T_j) = \dot{Q}_{hp}(T_j)$ and $\dot{E}_{hp}(T_j) = \dot{E}_{hp}(T_j)$). Note: Even though $T_o(T_j) \geq T_{cc}$, resistive heating may be required; evaluate Equation 4.2.1–2 for all bins.

Case 2. For outdoor bin temperatures where $T_o(T_j) > T_{cc}$, determine $\dot{Q}_h(T_j)$ and $\dot{E}_h(T_j)$ using,

$$\dot{Q}_{CC}(T_j) = \dot{m}_{da} * C_{p,da} * [T_{CC} - T_0(T_j)] \qquad \dot{E}_{CC}(T_j) = \frac{\dot{Q}_{CC}(T_j)}{3.413\frac{Btu/h}{W}}$$

NOTE: Even though $T_o(T_j) < T_{cc}$, additional resistive heating may be required; evaluate Equation 4.2.1–2 for all bins.

4.2.5.2 Heat pump having a heat comfort controller: Additional steps for calculating the HSPF of a heat pump having a single-speed compressor and a variable-speed, variable-air-volume-rate indoor blower. Calculate the space heating capacity and electrical power of the heat pump without the heat comfort controller being active as specified in section 4.2.2 (Equations 4.2.2–1 and 4.2.2–2) for each outdoor bin temperature, T_j, that is listed in Table 19. Denote these capacities and electrical powers by using the subscript ''hp'' instead of ''h.'' Calculate the mass flow rate (expressed in pounds-mass of dry air per hour) and the specific heat of the indoor air (expressed in Btu/lbm_{da} · °F) from the results of the $H1_2$ Test using:

$$\dot{m}_{da} = \overline{\dot{V}_s} * 0.075\frac{lbm_{da}}{ft^3} * \frac{60_{min}}{hr} = \frac{\overline{\dot{V}}_{mx}}{v_n' * [1 + W_n]} * \frac{60_{min}}{hr} = \frac{\overline{\dot{V}}_{mx}}{v_n} * \frac{60_{min}}{hr}$$

$$C_{p,da} = 0.24 + 0.444 * Q_n$$

Where $\overline{\dot{V}}_S$, $\overline{\dot{V}}_{mx}$, v'_n (or v_n), and W_n are defined following Equation 3–1. For each outdoor bin temperature listed in Table 19, calculate the nominal temperature of the air leaving the heat pump condenser coil using,

$$T_0(T_j) = 70°\text{F} + \frac{\dot{Q}_{hp}(T_j)}{\dot{m}_{da} * C_{p,da}}$$

Evaluate $e_h(T_j)/N$, $RH(T_j)/N$, $X(T_j)$, PLF_j, and $\delta(T_j)$ as specified in section 4.2.1 with the exception of replacing references to the H1C Test and section 3.6.1 with the $H1C_1$ Test and section 3.6.2. For each bin calculation, use the space heating capacity and electrical power from Case 1 or Case 2, whichever applies.

Case 1. For outdoor bin temperatures where $T_o(T_j)$ is equal to or greater than T_{CC} (the maximum supply temperature determined according to section 3.1.9), determine $\dot{Q}_h(T_j)$ and $\dot{E}_h(T_j)$ as specified in section 4.2.2 (*i.e.* $\dot{Q}_h(T_j) = \dot{Q}_{hp}(T_j)$ and $\dot{E}_h(T_j) = \dot{E}_{hp}(T_j)$). Note: Even though $T_o(T_j) \geq T_{CC}$, resistive heating may be required; evaluate Equation 4.2.1–2 for all bins.

Case 2. For outdoor bin temperatures where $T_o(T_j) < T_{CC}$, determine $\dot{Q}_h(T_j)$ and $\dot{E}_h(T_j)$ using,

$$\dot{Q}_{CC}(T_j) = \dot{m}_{da} * C_{p,da} * [T_{CC} - T_0(T_j)] \qquad \dot{E}_{CC}(T_j) = \frac{\dot{Q}_{CC}(T_j)}{3.413\frac{Btu/h}{W}}$$

Note: Even though $T_o(T_j) < T_{cc}$, additional resistive heating may be required; evaluate Equation 4.2.1–2 for all bins.

4.2.5.3 Heat pumps having a heat comfort controller: additional steps for calculating the HSPF of a heat pump having a two-capacity compressor. Calculate the space heating capacity and electrical power of the heat pump without the heat comfort controller being active as specified in section 4.2.3 for both high and low capacity and at each outdoor bin temperature, T_j, that is listed in Table 19. DeNote these capacities and electrical powers by using the subscript ''hp'' instead of ''h.'' For the low capacity case, calculate the mass flow rate (expressed in pounds-mass of dry air per hour) and the specific heat of the indoor air (expressed in $Btu/lbm_{da} \cdot °F$) from the results of the $H1_1$ Test using:

$$\dot{m}_{da}^{k=1} = \overline{\dot{V}_s} * 0.075\frac{lbm_{da}}{ft^3} * \frac{60_{min}}{hr} = \frac{\overline{\dot{V}}_{mx}}{v_n' * [1 + W_n]} * \frac{60_{min}}{hr} = \frac{\overline{\dot{V}}_{mx}}{v_n} * \frac{60_{min}}{hr}$$

$$C_{p,da}^{k=1} = 0.24 + 0.444 * W_n$$

Where $\overline{\dot{V}}_s$, $\overline{\dot{V}}_{mx}$, v'_n (or v_n), and W_n are defined following Equation 3–1. For each outdoor bin temperature listed in Table 19, calculate the nominal temperature of the air leaving the heat pump condenser coil when operating at low capacity using,

$$T_0^{k=1}(T_j) = 70°\text{F} + \frac{\dot{Q}_{hp}^{k=1}(T_j)}{\dot{m}_{da}^{k=1} * C_{p,da}^{k=1}}$$

Repeat the above calculations to determine the mass flow rate ($\dot{m}_{da}^{k=2}$) and the specific heat of the indoor air ($C_{p,da}^{k=2}$) when operating at high capacity by using the results of the $H1_2$ Test. For each outdoor bin temperature listed in Table 19, calculate the nominal temperature of the air leaving the heat pump condenser coil when operating at high capacity using,

$$T_0^{k=2}(T_j) = 70°\text{F} + \frac{\dot{Q}_{hp}^{k=2}(T_j)}{\dot{m}_{da}^{k=2} * C_{p,da}^{k=2}}$$

Evaluate $e_h(T_j)/N$, $RH(T_j)/N$, $X^{k=1}(T_j)$, and/or $X^{k=2}(T_j)$, PLF_j, and $\delta'(T_j)$ or $\delta''(T_j)$ as specified in section 4.2.3.1. 4.2.3.2, 4.2.3.3, or 4.2.3.4, whichever applies, for each temperature bin. To evaluate these quantities, use the low-capacity space heating capacity and the low-capacity electrical power from Case 1 or Case 2, whichever applies; use the high-capacity space heating capacity and the high-capacity electrical power from Case 3 or Case 4, whichever applies.

Case 1. For outdoor bin temperatures where $T_o^{k=1}(T_j)$ is equal to or greater than T_{CC} (the maximum supply temperature determined according to section 3.1.9), determine $\dot{Q}_h^{k=1}(T_j)$ and $\dot{E}_h^{k=1}(T_j)$ as specified in section 4.2.3 (*i.e.,* $\dot{Q}_h^{k=1}(T_j) = \dot{Q}_{hp}^{k=1}(T_j)$ and $\dot{E}_h^{k=1}(T_j) = \dot{E}_{hp}^{k=1}(T_j)$).

Note: Even though $T_o^{k=1}(T_j) \geq T_{CC}$, resistive heating may be required; evaluate $RH(T_j)/N$ for all bins.

Case 2. For outdoor bin temperatures where $T_o^{k=1}(T_j) < T_{CC}$, determine $\dot{Q}_h^{k=1}(T_j)$ and $\dot{E}_h^{k=1}(T_j)$ using,

$$\dot{Q}_h^{k=1}(T_j) = \dot{Q}_{hp}^{k=1}(T_j) + \dot{Q}_{CC}^{k=1}(T_j) \qquad \dot{E}_h^{k=1}(T_j) = \dot{E}_{hp}^{k=1}(T_j) + \dot{E}_{CC}^{k=1}(T_j)$$

where,

$$\dot{Q}_{CC}^{k=1}(T_j) = \dot{m}_{da}^{k=1} * C_{p,da}^{k=1} * [T_{CC} - T_0^{k=1}(T_j)] \qquad \dot{E}_{CC}^{k=1}(T_j) = \frac{\dot{Q}_{CC}^{k=1}(T_j)}{3.413\frac{Btu/h}{W}}$$

Note: Even though $T_o^{k=1}(T_j) \geq T_{cc}$, additional resistive heating may be required; evaluate $RH(T_j)/N$ for all bins.

Case 3. For outdoor bin temperatures where $T_o^{k=2}(T_j)$ is equal to or greater than T_{CC}, determine $\dot{Q}_h^{k=2}(T_j)$ and $\dot{E}_h^{k=2}(T_j)$ as specified in section 4.2.3 (*i.e.,* $\dot{Q}_h^{k=2}(T_j) = \dot{Q}_{hp}^{k=2}(T_j)$ and $\dot{E}_h^{k=2}(T_j) = \dot{E}_{hp}^{k=2}(T_j)$).

Note: Even though $T_o^{k=2}(T_j) < T_{CC}$, resistive heating may be required; evaluate $RH(T_j)/N$ for all bins.

Case 4. For outdoor bin temperatures where $T_o^{k=2}(T_j) < T_{CC}$, determine $\dot{Q}_h^{k=2}(T_j)$ and $\dot{E}_h^{k=2}(T_j)$ using,

$$\dot{Q}_h^{k=2}(T_j) = \dot{Q}_{hp}^{k=2}(T_j) + \dot{Q}_{CC}^{k=2}(T_j) \quad \dot{E}_h^{k=2}(T_j) = \dot{E}_{hp}^{k=2}(T_j) + \dot{E}_{CC}^{k=2}(T_j)$$

where,

$$\dot{Q}_{CC}^{k=2}(T_j) = \dot{m}_{da}^{k=2} * C_{p,da}^{k=2} * [T_{CC} - T_0^{k=2}(T_j)] \qquad \dot{E}_{CC}^{k=2}(T_j) = \frac{\dot{Q}_{CC}^{k=2}(T_j)}{3.413\frac{Btu/h}{W}}$$

Note: Even though $T_o^{k=2}(T_j) < T_{cc}$, additional resistive heating may be required; evaluate $RH(T_j)/N$ for all bins.

4.2.5.4 Heat pumps having a heat comfort controller: additional steps for calculating the HSPF of a heat pump having a variable-speed compressor. [Reserved]

4.2.6 Additional steps for calculating the HSPF of a heat pump having a triple-capacity compressor. The only triple-capacity heat pumps covered are triple-capacity, northern heat pumps.

For such heat pumps, the calculation of the Eq. 4.2–1 quantities

$$\frac{RH(T_j)}{N} \quad \text{and} \quad \frac{e_h(T_j)}{N}$$

differ depending on whether the heat pump would cycle on and off at low capacity (section 4.2.6.1), cycle on and off at high capacity (section 4.2.6.2), cycle on and off at booster capacity (4.2.6.3), cycle between low and high capacity (section 4.2.6.4), cycle between high and booster capacity (section 4.2.6.5), operate continuously at low capacity (4.2.6.6), operate continuously at high capacity (section 4.2.6.7), operate continuously at booster capacity (4.2.6.8), or heat solely using resistive heating (also section 4.2.6.8) in responding to the building load. As applicable, the manufacturer must supply information regarding the outdoor temperature range at which each stage of compressor capacity is active. As an informative example, data may be submitted in this manner: At the low (k=1) compressor capacity, the outdoor temperature range of operation is 40 °F ≤ T ≤ 65 °F; At the high (k=2) compressor capacity, the outdoor temperature range of operation is 20 °F ≤ T ≤ 50 °F; At the booster (k=3) compressor capacity, the outdoor temperature range of operation is −20 °F ≤ T ≤ 30 °F.

a. Evaluate the space heating capacity and electrical power consumption of the heat pump when operating at low compressor capacity and outdoor temperature Tj using the equations given in section 4.2.3 for $\dot{Q}_h^{k=1}(T_j)$ and $\dot{E}_h^{k=1}(T_j)$) In evaluating the section 4.2.3 equations, Determine $\dot{Q}_h^{k=1}(62)$ and $\dot{E}_h^{k=1}(62)$ from the $H0_1$ Test, $\dot{Q}_h^{k=1}(47)$ and $\dot{E}_h^{k=1}(47)$ from the $H1_1$ Test, and $\dot{Q}_h^{k=2}(47)$ and $\dot{E}_h^{k=2}(47)$ from the $H1_2$ Test. Calculate all four quantities as specified in section 3.7. If, in accordance with section 3.6.6, the $H3_1$ Test is conducted, calculate $\dot{Q}_h^{k=1}(17)$ and $\dot{E}_h^{k=1}(17)$ as specified in section 3.10 and determine $\dot{Q}_h^{k=1}(35)$ and $\dot{E}_h^{k=1}(35)$ as specified in section 3.6.6.

b. Evaluate the space heating capacity and electrical power consumption ($\dot{Q}_h^{k=2}(T_j)$ and $\dot{E}_h^{k=2}(T_j)$) of the heat pump when operating at high compressor capacity and outdoor temperature Tj by solving Equations 4.2.2–3 and 4.2.2–4, respectively, for k=2. Determine $\dot{Q}_h^{k=1}(62)$ and $\dot{E}_h^{k=1}(62)$ from the $H0_1$ Test, $\dot{Q}_h^{k=1}(47)$ and $\dot{E}_h^{k=1}(47)$ from the $H1_1$ Test, and $\dot{Q}_h^{k=2}(47)$ and $\dot{E}_h^{k=2}(47)$ from the $H1_2$ Test, evaluated as specified in section 3.7. Determine the equation input for $\dot{Q}_h^{k=2}(35)$ and $\dot{E}_h^{k=2}(35)$ from the $H2_2$, evaluated as specified in section 3.9.1. Also, determine $\dot{Q}_h^{k=2}(17)$ and $\dot{E}_h^{k=2}(17)$ from the $H3_2$ Test, evaluated as specified in section 3.10.

c. Evaluate the space heating capacity and electrical power consumption of the heat pump when operating at booster compressor capacity and outdoor temperature Tj using

$$\dot{Q}_h^{k=3}(T_j) = \begin{cases} \dot{Q}_h^{k=3}(17) + \dfrac{[\dot{Q}_h^{k=3}(35) - \dot{Q}_h^{k=3}(17)] * (T_j - 17)}{35 - 17}, & if\ 17\ °F < T_j \le 45\ °F \\ \dot{Q}_h^{k=3}(2) + \dfrac{[\dot{Q}_h^{k=3}(17) - \dot{Q}_h^{k=3}(2)] * (T_j - 2)}{17 - 2}, & if\ T_j \le 17\ °F \end{cases}$$

$$\dot{E}_h^{k=3}(T_j) = \begin{cases} \dot{E}_h^{k=3}(17) + \dfrac{[\dot{E}_h^{k=3}(35) - \dot{E}_h^{k=3}(17)] * (T_j - 17)}{35 - 17}, & if\ 17\ °F < T_j \le 45\ °F \\ \dot{E}_h^{k=3}(2) + \dfrac{[\dot{E}_h^{k=3}(17) - \dot{E}_h^{k=3}(2)] * (T_j - 2)}{17 - 2}, & if\ T_j \le 17\ °F \end{cases}$$

Determine $\dot{Q}_h^{k=3}(17)$ and $\dot{E}_h^{k=3}(17)$ from the $H3_3$ Test and determine $\dot{Q}_h^{k=2}(2)$ and $\dot{E}_h^{k=3}(2)$ from the $H4_3$ Test. Calculate all four quantities as specified in section 3.10. Determine the equation input for $\dot{Q}_h^{k=3}(35)$ and $\dot{E}_h^{k=3}(35)$ as specified in section 3.6.6.

4.2.6.1 Steady-state space heating capacity when operating at low compressor capacity is greater than or equal to the building heating load at temperature T_j, $\dot{Q}_h^{k=1}(T_j) \ge BL(T_j)$., and the heat pump permits low compressor capacity at T_j. Evaluate the quantities

$$\frac{RH(T_j)}{N} \quad \text{and} \quad \frac{e_h(T_j)}{N}$$

using Eqs. 4.2.3–1 and 4.2.3–2, respectively. Determine the equation inputs $X^{k=1}(T_j)$, PLF_j, and $\delta'(T_j)$ as specified in section 4.2.3.1. In calculating the part load factor, PLF_j, use the low-capacity cyclic-degradation coefficient C_D^h, [or equivalently, $C_D^h(k=1)$] determined in accordance with section 3.6.6.

4.2.6.2 Heat pump only operates at high (k=2) compressor capacity at temperature T_j and its capacity is greater than or equal to the building heating load, $BL(T_j) < \dot{Q}_h^{k=2}(T_j)$. Evaluate the quantities

$$\frac{RH(T_j)}{N} \quad \text{and} \quad \frac{e_h(T_j)}{N}$$

as specified in section 4.2.3.3. Determine the equation inputs $X^{k=2}(T_j)$, PLF_j, and $\delta'(T_j)$ as specified in section 4.2.3.3. In calculating the part load factor, PLF_j, use the high-capacity cyclic-degradation coefficient, $C_D^h(k=2)$ determined in accordance with section 3.6.6.

4.2.6.3 Heat pump only operates at high (k=3) compressor capacity at temperature T_j and its capacity is greater than or equal to the building heating load, $BL(T_j) \le \dot{Q}_h^{k=3}(T_j)$.

Calculate $\frac{RH(T_j)}{N}$ and using Eq. 4.2.3-2. Evaluate $\frac{e_h(T_j)}{N}$ using

$$\frac{e_h(T_j)}{N} = \frac{X^{k=3}(T_j) * \dot{E}_h^{k=3}(T_j) * \delta'(T_j)}{PLF_j} * \frac{n_j}{N}$$

where
Æ $X^{k=3}(T_j) = BL(T_j)/\dot{Q}_h^{k=3}(T_j)$ and $PLF_j = 1 - C{\le}h\ (k=3) * [1 - X^{k=3}(T_j)$

Determine the low temperature cut-out factor, $\delta'(T_j)$, using Eq. 4.2.3–3. Use the booster-capacity cyclic-degradation coefficient, $C_D^h(k=3)$ determined in accordance with section 3.6.6.

4.2.6.4 Heat pump alternates between high (k=2) and low (k=1) compressor capacity to satisfy the building heating load at a temperature T_j, $\dot{Q}_h^{k=1}(T_j) < BL(T_j) < \dot{Q}_h^{k=2}(T_j)$. Evaluate the quantities

$$\frac{RH(T_j)}{N} \quad \text{and} \quad \frac{e_h(T_j)}{N}$$

as specified in section 4.2.3.2. Determine the equation inputs $X^{k=1}(T_j)$, $X^{k=2}(T_j)$, and $\delta'(T_j)$ as specified in section 4.2.3.2.

4.2.6.5 Heat pump alternates between high (k=2) and booster (k=3) compressor capacity to satisfy the building heating load at a temperature T_j, $\dot{Q}_h^{k=2}(T_j) < BL(T_j) < \dot{Q}_h^{k=3}(T_j)$.

Calculate $\frac{RH(T_j)}{N}$ and using Eq. 4.2.3-2. Evaluate $\frac{e_h(T_j)}{N}$ using

$$\frac{e_h(T_j)}{N} = [X^{k=2}(T_j) * \dot{E}_h^{k=2}(T_j) + X^{k=3}(T_j) * \dot{E}_h^{k=3}(T_j)] * \delta'(T_j) * \frac{n_j}{N}$$

where:

$$X^{k=2}(T_j) = \frac{\dot{Q}_h^{k=3}(T_j) - BL(T_j)}{\dot{Q}_h^{k=3}(T_j) - \dot{Q}_h^{k=2}(T_j)}$$

and $X^{k=3}(T_j) = X^{k=2}(T_j)$ = the heating mode, booster capacity load factor for temperature bin j, dimensionless. Determine the low temperature cut-out factor, $\delta'(T_j)$, using Eq. 4.2.3–3.

4.2.6.6 Heat pump only operates at low (k=1) capacity at temperature T_j and its capacity is less than the building heating load, $BL(T_j) > \dot{Q}_h^{k=1}(T_j)$.

$$\frac{e_h(T_j)}{N} = \dot{E}_h^{k=1}(T_j) * \delta'(T_j) * \frac{n_j}{N} \quad \text{and} \quad \frac{RH(T_j)}{N} = \frac{BL(T_j) - [\dot{Q}_h^{k=1}(T_j) * \delta(T_j)]}{3.413 \frac{Btu/h}{W}} * \frac{n_j}{N}$$

Where the low temperature cut-out factor, $\delta'(Tj)$, is calculated using Eq. 4.2.3–3.

4.2.6.7 Heat pump only operates at high (k = 2) capacity at temperature Tj and its capacity is less than the building heating load, $BL(T_j) > \dot{Q}_h^{k=2}(T_j)$. Evaluate the quantities

$$\frac{RH(T_j)}{N} \quad \text{and} \quad \frac{e_h(T_j)}{N}$$

as specified in section 4.2.3.4. Calculate $\delta''(Tj)$ using the equation given in section 4.2.3.4.

4.2.6.8 Heat pump only operates at booster (k = 3) capacity at temperature Tj and its capacity is less than the building heating load, $BL(T_j) > \dot{Q}_h^{k=3}(T_j)$. or the system converts to using only resistive heating.

$$\frac{e_h(T_j)}{N} = \dot{E}_h^{k=3}(T_j) * \delta'(T_j) * \frac{n_j}{N} \quad \text{and} \frac{RH(T_j)}{N} = \frac{BL(T_j) - [\dot{Q}_h^{k=3}(T_j) * \delta'(T_j)]}{3.413 \frac{Btu/h}{W}} * \frac{n_j}{N}$$

Where $\delta''(Tj)$ is calculated as specified in section 4.2.3.4 if the heat pump is operating at its booster compressor capacity. If the heat pump system converts to using only resistive heating at outdoor temperature T_j, set $\delta'(T_j)$ equal to zero.

4.2.7 Additional steps for calculating the HSPF of a heat pump having a single indoor unit with multiple blowers. The calculation of the Eq. 4.2–1 quantities $e_h(T_j)/N$ and $RH(T_j)/N$ are evaluated as specified in applicable below subsection.

4.2.7.1 For multiple blower heat pumps that are connected to a singular, single-speed outdoor unit.

a. Calculate the space heating capacity, $\dot{Q}_h^{k=1}(Tj)$, and electrical power consumption, $\dot{E}_h^{k=1}(Tj)$, of the heat pump when operating at the heating minimum air volume rate and outdoor temperature T_j using Eqs. 4.2.2–3 and 4.2.2–4, respectively. Use these same equations to calculate the space heating capacity, $\dot{Q}_h^{k=2}$ (Tj) and electrical power consumption, $\dot{E}_h^{k=2}(Tj)$, of the test unit when operating at the heating full-load air volume rate and outdoor temperature T_j. In evaluating Eqs. 4.2.2–3 and 4.2.2–4, determine the quantities $\dot{Q}_h^{k=1}$ (47) and $\dot{E}_h^{k=1}(47)$ from the $H1_1$ Test; determine $\dot{Q}_h^{k=2}$ (47) and $\dot{E}_h^{k=2}(47)$ from the $H1_2$ Test. Evaluate all four quantities according to section 3.7. Determine the quantities $\dot{Q}_h^{k=1}(35)$ and $\dot{E}_h^{k=1}(35)$ as specified in section 3.6.2. Determine $\dot{Q}_h^{k=2}(35)$ and $\dot{E}_h^{k=2}(35)$ from the $H2_2$ Frost Accumulation Test as calculated according to section 3.9.1. Determine the quantities $\dot{Q}_h^{k=1}(17)$ and $\dot{E}_h^{k=1}(17)$ from the $H3_1$ Test, and $\dot{Q}_h^{k=2}(17)$ and $\dot{E}_h^{k=2}(17)$ from the $H3_2$ Test. Evaluate all four quantities according to section 3.10. Refer to section 3.6.2 and Table 11 for additional information on the referenced laboratory tests.

b. Determine the heating mode cyclic degradation coefficient, CD_h, as per sections 3.6.2 and 3.8 to 3.8.1. Assign this same value to $CD_h(k = 2)$.

c. Except for using the above values of $\dot{Q}_h^{k=1}(Tj)$, $\dot{E}_h^{k=1}(Tj)$, $\dot{Q}_h^{k=2}(Tj)$, $\dot{E}_h^{k=2}(Tj)$, CD_h, and $CD_h(k = 2)$, calculate the quantities $e_h(T_j)/N$ as specified in section 4.2.3.1 for cases where $\dot{Q}_h^{k=1}(Tj) \geq BL(T_j)$. For all other outdoor bin temperatures, T_j, calculate $e_h(Tj)/N$ and $RH_h(Tj)/N$ as specified in section 4.2.3.3 if $\dot{Q}_h^{k=2}(Tj) > BL(Tj)$ or as specified in section 4.2.3.4 if $\dot{Q}_h^{k=2}(Tj) \leq BL(T_j)$.

4.2.7.2 For multiple blower heat pumps connected to either a lone outdoor unit with a two-capacity compressor or to two separate but identical model single-speed outdoor units. Calculate the quantities $e_h(T_j)/N$ and $RH(T_j)/N$ as specified in section 4.2.3.

4.3 Calculations of Off-mode Seasonal Power and Energy Consumption.

4.3.1 For central air conditioners and heat pumps with a cooling capacity of:

less than 36,000 Btu/h, determine the off mode rating, $P_{W,OFF}$, with the following equation:

$$P_{W,OFF} = \begin{cases} P1 & if\ P2 = 0 \\ \frac{P1+P2}{2} & otherwise \end{cases};$$

4.3.2 Calculate the off mode energy consumption for both central air conditioner and heat pumps for the shoulder season, *E1*, using: $E1 = P1 \cdot SSH$; and the off mode energy consumption of a CAC, only, for the heating season, *E2*, using: $E2 = P2 \cdot HSH$; where *P1* and *P2* is determined in Section 3.13. *HSH* can be determined by multiplying the heating season-hours from Table 20 with the fractional Bin-hours, from Table 19, that pertain to the range of temperatures at which the crankcase heater operates. If the crankcase heater is controlled to disable for the heating season, the temperature range at which the crankcase heater operates is defined to be from 72 °F to five degrees Fahrenheit below a turn-off temperature specified by the manufacturer in the DOE Compliance Certification Database. If the crankcase heater is operated during the heating season, the temperature range at which the crankcase heater operates is defined to be from 72 °F to −23 °F, the latter of which is a temperature that sets the range of Bin-hours to encompass all outside air temperatures in the heating season.

SSH can be determined by multiplying the shoulder season-hours from Table 20 with the fractional Bin-hours in Table 21.

TABLE 20—REPRESENTATIVE COOLING AND HEATING LOAD HOURS AND THE CORRESPONDING SET OF SEASONAL HOURS FOR EACH GENERALIZED CLIMATIC REGION

Climatic region	Cooling load hours CLH_R	Heating load hours HLH_R	Cooling season hours CSH_R	Heating season hours HSH_R	Shoulder season hours SSH_R
I	2,400	750	6,731	1,826	203
II	1,800	1,250	5,048	3,148	564
III	1,200	1,750	3,365	4,453	942
IV	800	2,250	2,244	5,643	873
Rating Values	1,000	2,080	2,805	5,216	739
V	400	2,750	1,122	6,956	682

TABLE 20—REPRESENTATIVE COOLING AND HEATING LOAD HOURS AND THE CORRESPONDING SET OF SEASONAL HOURS FOR EACH GENERALIZED CLIMATIC REGION—Continued

Climatic region	Cooling load hours CLH_R	Heating load hours HLH_R	Cooling season hours CSH_R	Heating season hours HSH_R	Shoulder season hours SSH_R
VI	200	2,750	561	6,258	1,941

HSH is evaluated as: $HSH = \frac{HLH \cdot (65 - T_{OD})}{\sum_{j=1}^{J} (65 - T_j) \cdot \frac{n_j}{N}}$,

where T_{OD} and $\frac{n_j}{N}$ are listed in Table 18 and depend on the location of interest relative to Figure 1. For the six generalized climatic regions, this equation simplifies to the following set of equations:

Region I: $HSH = 2.4348HLH$;
Region II: $HSH = 2.5182HLH$;
Region III: $HSH = 2.5444HLH$;
Region IV: $HSH = 2.5078HLH$;
Region V: $HSH = 2.5295HLH$;
Region VI: $HSH = 2.2757HLH$;

SSH is evaluated: $SSH = 8760 - (CSH + HSH)$. where CSH = the cooling season hours calculated using $CSH = 2.8045 \cdot CLH$.

TABLE 21—FRACTIONAL BIN HOURS FOR THE SHOULDER SEASON HOURS FOR ALL REGIONS

T_j(°F)	Fractional bin hours	
	Air conditioners	Heat pumps
72	0.333	0.167
67	0.667	0.333
62	0	0.333
57	0	0.167

4.3.3 If a shoulder season crankcase heater time delay and/or a heating season crankcase heater time delay is specified by the manufacturer, multiply E1 and/or E2, by $\left(1 - \frac{t_{delay,i}}{60}\right)$, where $t_{delay,1}$ is the time delay for operation during the shoulder season and $t_{delay,2}$ is the time delay for operation during the heating season, in minutes. If a time delay is not specified, $t_{delay,i}$ is 15 minutes.

4.3.4 For air conditioners, the annual off mode energy consumption, E_{TOTAL}, is: $E_{TOTAL} = E1 + E2$.

4.3.5 For heat pumps, the annual off mode energy consumption, E_{TOTAL}, is $E1$.

4.4 Calculations of the Actual and Representative Regional Annual Performance Factors for Heat Pumps.

4.4.1 Calculation of actual regional annual performance factors (APF_A) for a particular location and for each standardized design heating requirement.

$$APF_A = \frac{CLH_A \cdot \dot{Q}_c^k(95) + HLH_A \cdot DHR \cdot C}{\frac{CLH_A \cdot \dot{Q}_c^k(95)}{SEER} + \frac{HLH_A \cdot DHR \cdot C}{HSPF} + P1 \cdot SSH + P2 \cdot HSH},$$

Where,

CLH_A = the actual cooling hours for a particular location as determined using the map given in Figure 2, hr.

$\dot{Q}_c^k(95)$ = the space cooling capacity of the unit as determined from the A or A_2 Test, whichever applies, Btu/h.

HLH_A = the actual heating hours for a particular location as determined using the map given in Figure 1, hr.

DHR = the design heating requirement used in determining the HSPF; refer to section 4.2 and see section 1.2, Definitions, Btu/h.

C = defined in section 4.2 following Equation 4.2–2, dimensionless.

SEER = the seasonal energy efficiency ratio calculated as specified in section 4.1, Btu/W·h.

HSPF = the heating seasonal performance factor calculated as specified in section

4.2 for the generalized climatic region that includes the particular location of interest (see Figure 1), Btu/W·h. The HSPF should correspond to the actual design heating requirement (DHR), if known. If it does not, it may correspond to one of the standardized design heating requirements referenced in section 4.2.

P1 is the shoulder season per-compressor off mode power, as determined in section 3.13, W.

SSH is the shoulder season hours, hr.

P2 is the heating season per-compressor off mode power, as determined in section 3.13, W.

HSH is the heating season hours, hr.

4.4.2 Calculation of representative regional annual performance factors (APF_R) for each generalized climatic region and for each standardized design heating requirement.

$$APF_R = \frac{CLH_R \cdot \dot{Q}_c^k(95) + HLH_R \cdot DHR \cdot C}{\frac{CLH_R \cdot \dot{Q}_c^k(95)}{SEER} + \frac{HLH_R \cdot DHR \cdot C}{HSPF} + P1 \cdot SSH + P2 \cdot HSH},$$

Where,

CLH_R = the representative cooling hours for each generalized climatic region, Table 22, hr.

HLH_R = the representative heating hours for each generalized climatic region, Table 22, hr.

HSPF = the heating seasonal performance factor calculated as specified in section 4.2 for the each generalized climatic region and for each standardized design heating requirement within each region, Btu/W.h.

The SEER, $\dot{Q}_c^k(95)$, DHR, and C are the same quantities as defined in section 4.4.1. Figure 1 shows the generalized climatic regions.

TABLE 22—REPRESENTATIVE COOLING AND HEATING LOAD HOURS FOR EACH GENERALIZED CLIMATIC REGION

Region	CLH_R	HLH_R
I	2400	750
II	1800	1250
III	1200	1750
IV	800	2250
V	400	2750
VI	200	2750

4.5. Rounding of SEER, HSPF, and APF for reporting purposes. After calculating SEER according to section 4.1, HSPF according to section 4.2, and APF according to section 4.4, round the values off as specified in subpart B 430.23(m) of Title 10 of the Code of Federal Regulations.

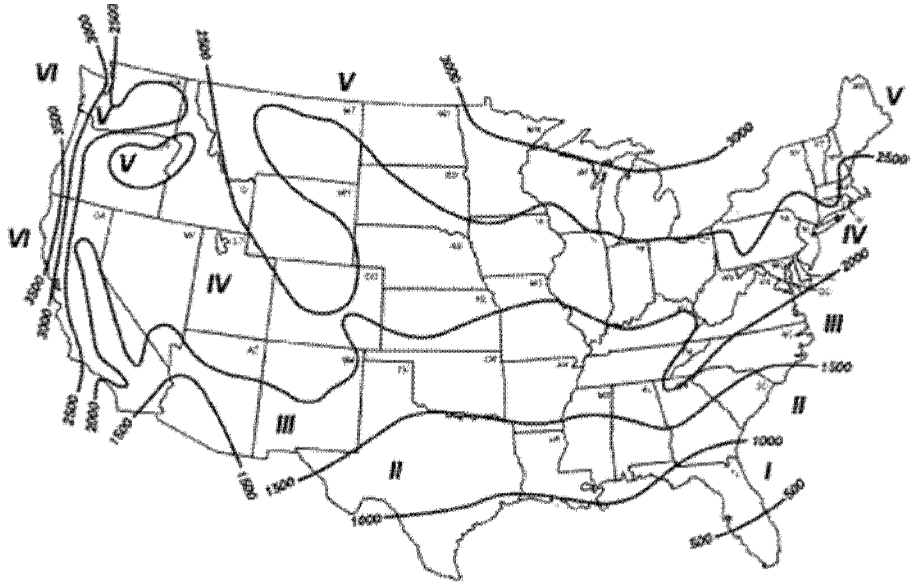

Figure 1—Heating Load Hours (HLH_A) for the United States

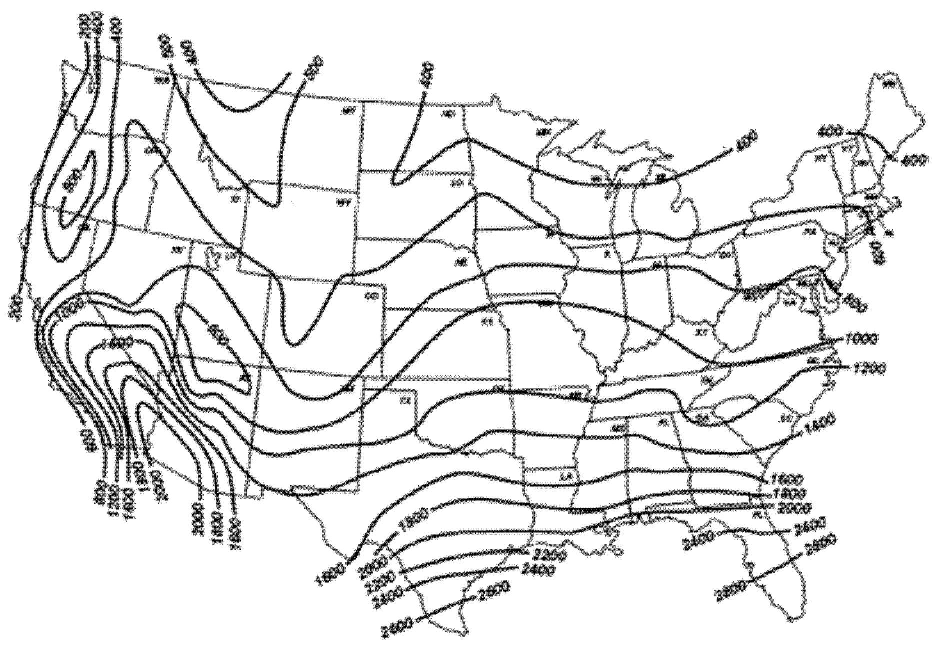

Figure 2—Cooling Load Hours (CLH_A) for the United States

4.6 Calculations of the SHR, which should be computed for different equipment configurations and test conditions specified in Table 23.

TABLE 23 APPLICABLE TEST CONDITIONS FOR CALCULATION OF THE SENSIBLE HEAT RATIO

Equipment configuration	Reference Table No. of Appendix M	SHR computation with results from	Computed values
Units Having a Single-Speed Compressor and a Fixed-Speed Indoor blower, a Constant Air Volume Rate Indoor blower, or No Indoor blower.	4	B Test	SHR(B).
Units Having a Single-Speed Compressor That Meet the Section 3.2.2.1 Indoor Unit Requirements.	5	B2 and B1 Tests	SHR(B1), SHR(B2).
Units Having a Two-Capacity Compressor	6	B2 and B1 Tests	SHR(B1), SHR(B2).
Units Having a Variable-Speed Compressor	7	B2 and B1 Tests	SHR(B1), SHR(B2).

The SHR is defined and calculated as follows:

$$SHR = \frac{Sensible\ Cooling\ Capacity}{Total\ Cooling\ Capacity}$$

$$= \frac{\dot{Q}_{sc}^{k}(T)}{\dot{Q}_{c}^{k}(T)}$$

Where both the total and sensible cooling capacities are determined from the same cooling mode test and calculated from data collected over the same 30-minute data collection interval.

4.7 Calculations of the Energy Efficiency Ratio (EER). Calculate the energy efficiency ratio using,

$$EER = \frac{Total\ Cooling\ Capacity}{Total\ Electrical\ Power\ Consumption}$$

$$= \frac{\dot{Q}_{c}^{k}(T)}{\dot{E}_{c}^{k}(T)}$$

Where $\dot{Q}_c{}^k(T)$ and $\dot{E}_c{}^k(T)$ are the space cooling capacity and electrical power consumption determined from the 30-minute data collection interval of the same steady-state wet coil cooling mode test and calculated as specified in section 3.3. Add the letter identification for each steady-state test as a subscript (*e.g.,* EER_{A_2}) to differentiate among the resulting EER values.

■ 12. Section 430.32 is amended by revising paragraph (c) to read as follows:

§ 430.32 Energy and water conservation standards and their compliance dates.

* * * * *

(c) *Central air conditioners and heat pumps.* The energy conservation standards defined in terms of the heating seasonal performance factor are based on Region IV, the minimum standardized design heating requirement, and the provisions of 10 CFR 429.16 of this chapter.

(1) Each basic model of single-package central air conditioners and central air conditioning heat pumps and each individual combination of split-system central air conditioners and central air conditioning heat pumps manufactured on or after January 1, 2015, shall have a Seasonal Energy Efficiency Ratio and Heating Seasonal Performance Factor not less than:

Product class	Seasonal energy efficiency ratio (SEER)	Heating seasonal performance factor (HSPF)
(i) Split-system air conditioners	13	
(ii) Split-system heat pumps	14	8.2
(iii) Single-package air conditioners	14	
(iv) Single-package heat pumps	14	8.0
(v) Small-duct, high-velocity systems	12	7.2
(vi)(A) Space-constrained products—air conditioners	12	
(vi)(B) Space-constrained products—heat pumps	12	7.4

(2) In addition to meeting the applicable requirements in paragraph (c)(2) of this section, products in product class (i) of that paragraph (*i.e.,* split-system air conditioners) that are installed on or after January 1, 2015, and

installed in the States of Alabama, Arkansas, Delaware, Florida, Georgia, Hawaii, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, or Virginia, or in the District of Columbia, shall have a Seasonal Energy Efficiency Ratio not less than 14. The least efficient combination of each basic model must comply with this standard.

(3) In addition to meeting the applicable requirements in paragraphs (c)(2) of this section, products in product classes (i) and (iii) of paragraph (c)(2) (*i.e.,* split-system air conditioners and single-package air conditioners) that are installed on or after January 1, 2015, and installed in the States of Arizona, California, Nevada, or New Mexico shall have a Seasonal Energy Efficiency Ratio not less than 14 and have an Energy Efficiency Ratio (at a standard rating of 95 °F dry bulb outdoor temperature) not less than the following:

Product class	Energy efficiency ratio (EER)
(i) Split-system rated cooling capacity less than 45,000 Btu/hr	12.2
(ii) Split-system rated cooling capacity equal to or greater than 45,000 Btu/hr	11.7
(iii) Single-package systems	11.0

The least efficient combination of each basic model must comply with this standard.

(4) Each basic model of single-package central air conditioners and central air conditioning heat pumps and each individual combination of split-system central air conditioners and central air conditioning heat pumps manufactured on or after January 1, 2015, shall have an average off mode electrical power consumption not more than the following:

Product class	Average off mode power consumption $P_{W,OFF}$ (watts)
(i) Split-system air conditioners	30
(ii) Split-system heat pumps	33
(iii) Single-package air conditioners	30
(iv) Single-package heat pumps	33
(v) Small-duct, high-velocity systems	30
(vi) Space-constrained air conditioners	30
(vii) Space-constrained heat pumps	33

* * * * *

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Part III

Environmental Protection Agency

40 CFR Part 82

Protection of Stratospheric Ozone: Update to the Refrigerant Management Requirements Under the Clean Air Act; Proposed Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 82

[EPA–HQ–OAR–2015–0453; FRL–9933–48–OAR]

RIN 2060–AS51

Protection of Stratospheric Ozone: Update to the Refrigerant Management Requirements Under the Clean Air Act

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Clean Air Act prohibits the knowing release of ozone-depleting and substitute refrigerants during the course of maintaining, servicing, repairing, or disposing of appliances or industrial process refrigeration. The existing regulations require that persons servicing or disposing of air-conditioning and refrigeration equipment observe certain service practices that reduce emissions of ozone-depleting refrigerant. This proposed rule would update those existing requirements as well as extend them, as appropriate, to non-ozone-depleting substitute refrigerants, such as hydrofluorocarbons. The proposed updates include strengthening leak repair requirements, establishing recordkeeping requirements for the disposal of appliances containing five to 50 pounds of refrigerant, changes to the technician certification program, and changes for improved readability, compliance, and restructuring of the requirements. As a result, this action would reduce emissions of ozone-depleting substances and gases with high global warming potentials.

DATES: Comments must be received on or before January 8, 2016. Any party requesting a public hearing must notify the contact listed below under **FOR FURTHER INFORMATION CONTACT** by 5 p.m. Eastern Daylight Time on November 16, 2015. If a public hearing is requested, the hearing will be held on or around November 24, 2015. If a hearing is held, it will take place at EPA headquarters in Washington, DC. EPA will post a notice on our Web site, *www.epa.gov/ozone/strathome.html,* announcing further information should a hearing take place.

Under the Paperwork Reduction Act (PRA), comments on the information collection provisions are best assured of consideration if the Office of Management and Budget (OMB) receives a copy of your comments on or before December 9, 2015.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA–HQ–OAR–2015–0453, to the Federal eRulemaking Portal: *http://www.regulations.gov.* Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or withdrawn. EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. EPA will generally not consider comments or comment contents located outside of the primary submission (*i.e.* on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit *http://www2.epa.gov/dockets/commenting-epa-dockets.*

FOR FURTHER INFORMATION CONTACT: Luke Hall-Jordan, Stratospheric Protection Division, Office of Atmospheric Programs, Mail Code 6205T, 1200 Pennsylvania Avenue NW., Washington, DC 20460; telephone number (202) 343–9591; email address *hall-jordan.luke@epa.gov.* You may also visit *www.epa.gov/ozone/title6/608* for further information about refrigerant management, other Stratospheric Ozone Protection regulations, the science of ozone layer depletion, and related topics.

SUPPLEMENTARY INFORMATION:

Table of Contents

List of Acronyms

AHEF—Atmospheric and Health Effects Framework model
AHRI—Air Conditioning, Heating, and Refrigeration Institute
ARI—Air Conditioning and Refrigeration Institute (now AHRI)
ASHRAE—American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
CAA—Clean Air Act
CARB—California Air Resources Board
CBI—Confidential business information

CFC—Chlorofluorocarbon
CO_2—Carbon dioxide
GHG—Greenhouse gas
GWP—Global warming potential
HCFC—Hydrochlorofluorocarbon
HFC—Hydrofluorocarbon
HFO—Hydrofluoroolefin
IPCC—Intergovernmental Panel on Climate Change
IPR—Industrial process refrigeration
$MMTCO_2eq$—Million metric tons carbon dioxide equivalent
MVAC—Motor vehicle air conditioner
NAICS—North American Industry Classification System
ODP—Ozone depletion potential
ODS—Ozone-depleting substance
PFC—Perfluorocarbon
RMP—Refrigerant Management Program
SCAQMD—South Coast Air Quality Management District
SNAP—Significant New Alternatives Policy
UL—Underwriters Laboratories

I. General Information

A. Does this action apply to me?

Categories and entities potentially regulated by this action include those who own, operate, maintain, service, repair, recycle or dispose of refrigeration and air-conditioning appliances and refrigerants, as well as entities that manufacture or sell refrigerants, products and services for the refrigeration and air-conditioning industry. Regulated entities include, but are not limited to, the following:

Category	North American Industry Classification System (NAICS) Code	Examples of regulated entities
Industrial Process Refrigeration (IPR).	111, 11251, 11511, 21111, 2211, 2212, 2213, 311, 3121, 3221, 3222, 32311, 32411, 3251, 32512, 3252, 3253, 32541, 3256, 3259, 3261, 3262, 3324, 3328, 33324, 33341, 33361, 3341, 3344, 3345, 3346, 3364, 33911, 339999.	Owners or operators of refrigeration equipment used in agriculture and crop production, oil and gas extraction, ice rinks, and the manufacture of frozen food, dairy products, food and beverages, ice, petrochemicals, chemicals, machinery, medical equipment, plastics, paper, and electronics.
Commercial Refrigeration.	42374, 42393, 42399, 4242, 4244, 42459, 42469, 42481, 42493, 4451, 4452, 45291, 48422, 4885, 4931, 49312, 72231.	Owners or operators of refrigerated warehousing and storage facilities, supermarkets, grocery stores, warehouse clubs, supercenters, convenience stores, and refrigerated transport.
Comfort Cooling	45211, 45299, 453998, 512, 522, 524, 531, 5417, 551, 561, 6111, 6112, 6113, 61151, 622, 7121, 71394, 721, 722, 813, 92.	Owners or operators of air-conditioning equipment used in the following: Hospitals, office buildings, colleges and universities, metropolitan transit authorities, real estate rental & leased properties, lodging and food services, property management, schools, and public administration or other public institutions.
Plumbing, Heating, and Air-Conditioning Contractors.	238220, 81131, 811412	Plumbing, heating, and air-conditioning contractors, and refrigerant recovery contractors.
Manufacturers and Distributors of Small Cans of Refrigerant.	325120, 441310, 447110	Automotive parts and accessories stores and industrial gas manufacturers.
Reclaimers	325120, 423930, 424690, 562920, 562212.	Industrial gas manufacturers, recyclable material merchant wholesalers, materials recovery facilities, solid waste landfills, and other chemical and allied products merchant wholesalers.
Disposers and Recyclers of Appliances.	423990, 562212, 562920	Materials recovery facilities, solid waste landfills, and other miscellaneous durable goods merchant wholesalers.
Refrigerant Wholesalers.	325120, 42, 424690	Industrial gas manufacturers, other chemical and allied products merchant wholesalers, wholesale trade.
Certifying Organizations.	541380	Environmental test laboratories and services.

This table is not intended to be exhaustive, but rather provides a guide for readers regarding the types of entities that could potentially be regulated by this action. Other types of entities not listed in the table could also be affected. To determine whether your facility, company, business organization, or other entity is regulated by this action, you should carefully examine the applicability criteria contained in section 608 of the Clean Air Act (CAA or the Act) as amended and this proposed rule. If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the **FOR FURTHER INFORMATION CONTACT** section.

B. What action is the Agency taking?

The existing regulations require that persons servicing or disposing of air-conditioning and refrigeration equipment observe certain service practices that reduce emissions of ozone-depleting refrigerant. Specifically, these provisions include: Requiring that technicians be certified to work on appliances; restricting the sale of refrigerant to certified technicians; specifying the proper evacuation levels before opening up an appliance; requiring the use of certified refrigerant recovery and/or recycling equipment; requiring the maintenance and repair of appliances that meet certain size and leak rate thresholds; requiring that ozone-depleting refrigerants be removed from appliances prior to disposal; requiring that air-conditioning and refrigeration equipment be provided with a servicing aperture or process stub to facilitate refrigerant recovery; requiring that refrigerant reclaimers be certified in order to reclaim and sell used refrigerant; and establishing standards for technician certification programs, recovery equipment, and quality of reclaimed refrigerant.

This rule proposes to update the existing requirements in 40 CFR part 82, subpart F (subpart F) that currently apply to ozone-depleting refrigerants and then extend those requirements, as appropriate, to non-ozone-depleting substitute refrigerants, including but not limited to hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs). This rule would also streamline the regulations to improve clarity.

C. What is the Agency's authority for taking this action?

EPA is proposing these revisions to the National Recycling and Emission Reduction Program found at 40 CFR part 82, subpart F under the authority of section 608 of the CAA. More detail on EPA's authority for this action is provided in the following sections. To summarize briefly, section 608(a) requires EPA to promulgate regulations regarding the use and disposal of ozone-depleting substances (ODS) that reduce the use and emissions of such substances to the lowest achievable level, and to maximize the recapturing and recycling of such substances. Section 608(c) prohibits any person from knowingly venting, releasing, or disposing into the environment any ozone-depleting or substitute refrigerant in the course of maintaining, servicing, repairing, or disposing of air-conditioning or refrigeration appliances or industrial process refrigeration (IPR). In addition, EPA's authority for this rulemaking is supplemented by section 301(a) which provides authority to ''prescribe such regulations as are necessary to carry out [the EPA Administrator's] functions under this Act'' and section 114 which provides authority for the EPA Administrator to require recordkeeping and reporting in carrying out any provision of the CAA (with certain exceptions that do not apply here).

D. What are the incremental costs and benefits of this action?

The revisions proposed here would require certain businesses to take actions that would have financial costs, such as conducting leak inspections, repairing leaks, and keeping records. The Agency has performed an analysis to estimate the impact on the entire United States economy associated with the proposed regulatory changes. Total incremental compliance costs associated with this proposed rule are estimated to be $63 million per year in 2014 dollars. Total annual operating savings associated with reduced refrigerant use are estimated to be $52 million; thus incremental compliance costs and refrigerant savings combined are estimated to be approximately $11 million. A more detailed description of the results of the analysis and the methods used can be found in the technical support document, *Analysis of the Economic Impact and Benefits of Proposed Revisions to the National Recycling and Emission Reduction Program.*

The proposed update and revisions to the requirements under section 608 would significantly reduce emissions of refrigerants and thus ameliorate the harm they would cause to the environment. EPA estimates that the proposed revisions will prevent damage to the stratospheric ozone layer by reducing emissions of ozone-depleting refrigerants by approximately 116 metric tons per year, weighted by the ozone-depletion potential (ODP) of the gases emitted. Avoided emissions of ozone-depleting refrigerants and non-ozone-depleting substitutes will also safeguard Earth's climate because most of these refrigerants are potent greenhouse gases. Weighted by their global warming potentials (GWP),[1] EPA estimates that the proposed revisions will prevent annual emissions of greenhouse gases equivalent to 7.5 million metric tons of carbon dioxide ($MMTCO_2eq$). The reductions in emissions of GHGs and ODS have benefits for human health and the environment, which have been discussed at length in prior EPA rulemakings including the Endangerment and Cause or Contribute Findings for Greenhouse Gases (74 FR 66496, 66517, 66539) and in section II.D of this preamble. Details of the benefits and the methods used to estimate them are discussed later in this preamble and in the technical support document referenced above.

EPA anticipates further benefits including emissions reductions associated with enhanced recordkeeping provisions, and emissions reductions following from consistent standards for ODS- and substitute-containing appliances. These additional benefits have not been quantified. There may be additional energy savings due to leak repair, which also have not been quantified.

[1] Unless otherwise stated, GWPs stated in this document are 100-year integrated GWPs, relative to a GWP of 1 for carbon dioxide, as reported in IPCC, 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M.Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. This document is accessible at *www.ipcc.ch/publications_and_data/ar4/wg1/en/contents.html.* For blends of multiple compounds, we are weighting the GWP of each component by mass percentage in the blend.

II. Background

A. What are ozone-depleting substances?

The stratospheric ozone layer protects life on Earth from the sun's harmful radiation. This natural shield has gradually been depleted by man-made chemicals. Chlorofluorocarbons (CFCs) were discovered in the 1970s to deplete the stratospheric ozone layer. CFCs and other class I ODS like methyl chloroform, carbon tetrachloride, and halons were used as refrigerants, solvents, foam blowing agents, fire suppression agents and in other smaller applications. Class I ODS have been phased out though they may still be reclaimed from existing appliances and reused. Hydrochlorofluorocarbons (HCFCs), class II ODS with lower potential to deplete the ozone layer than class I substances, are currently being phased out. All of these compounds have atmospheric lifetimes long enough to allow them to be transported by winds into the stratosphere. Because they release chlorine or bromine when they break down, they damage the protective ozone layer.

The initial concern about the ozone layer in the 1970s led to a ban on the use of CFCs as aerosol propellants in several countries, including the United States. In 1985, the Vienna Convention on the Protection of the Ozone Layer was adopted to formalize international cooperation on this issue. Additional efforts resulted in the adoption of the Montreal Protocol on Substances that Deplete the Ozone Layer in 1987. Today, all countries recognized by the United Nations have ratified the Montreal Protocol and have agreed to phase out the production of ODS.

B. What is the National Recycling and Emission Reduction Program?

Section 608 of the CAA requires EPA to establish a comprehensive refrigerant management program to limit emissions of ozone-depleting refrigerants. Section 608 also prohibits the knowing release or disposal of ozone-depleting refrigerant and their substitutes during the maintenance, service, repair, or disposal of air-conditioning and refrigeration appliances or IPR. Section 608 is described in greater detail in Section III of this proposal below.

EPA first issued regulations under section 608 of the CAA on May 14, 1993 (58 FR 28660, ''1993 Rule''), to establish the national refrigerant management program for ozone-depleting refrigerants recovered during the maintenance, service, repair, and disposal of air-conditioning and refrigeration appliances. Together with the prohibition on venting during the maintenance, service, repair, or disposal of class I and class II ODS (January 22, 1991; 56 FR 2420), these regulations were intended to substantially reduce the use and emissions of ozone-depleting refrigerants.

The regulations require that persons servicing air-conditioning and refrigeration equipment containing an ozone-depleting refrigerant observe certain practices that reduce emissions. They also established refrigerant recovery equipment requirements, reclamation certification requirements, technician certification requirements, and restricted the sale of refrigerant to certified technicians. In addition, they required that ODS be removed from appliances prior to disposal, and that all air-conditioning and refrigeration equipment using an ODS be provided with a servicing aperture or process stub to facilitate refrigerant recovery.

The 1993 Rule also established a requirement to repair leaking appliances containing 50 or more pounds of ODS refrigerant. The rule set an annual leak rate of 35 percent for commercial refrigeration appliances and IPR and 15 percent for comfort cooling appliances. If the applicable leak rate is exceeded, the appliance must be repaired within 30 days.

EPA revised these regulations through subsequent rulemakings published on August 19, 1994 (59 FR 42950), November 9, 1994 (59 FR 55912), August 8, 1995 (60 FR 40420), July 24, 2003 (68 FR 43786), March 12, 2004 (69 FR 11946), and January 11, 2005 (70 FR 1972). EPA has also issued proposed rules to revise the regulations in subpart F on June 11, 1998 (63 FR 32044) and December 15, 2010 (75 FR 78558), elements of which were not finalized and which EPA is re-proposing in this rule.

The August 19, 1994, rule amended specific definitions, required practices, and reporting and recordkeeping requirements, as well as adopted industry standards for reclaimed ODS refrigerants.

The November 9, 1994, rule clarified the conditions under which technician certification programs were grandfathered, allowing technicians who had participated in voluntary technician training and certification programs prior to the publication of the 1993 Rule to receive formal certification. The rule also clarified the scope of the technician certification requirement and provided a limited exemption from certification requirements for apprentices.

The August 8, 1995, rule was issued in response to a settlement agreement between EPA and the Chemical Manufacturers Association to give additional flexibility to repair or retrofit IPR appliances containing ODS. In that rule, EPA allowed owners or operators additional time beyond 30 days to complete repairs to address leaks and more than one year to retrofit appliances where certain conditions applied (*i.e.,* equipment located in areas subject to radiological contamination, unavailability of necessary parts, or adherence to local or State laws hinder immediate repairs). EPA also clarified that purged refrigerants that have been captured and destroyed can be excluded from the leak rate calculations.

The July 24, 2003, rule finalized portions of a proposed rulemaking (61 FR 7858; February 29, 1996) that amended the recordkeeping aspects of the section 608 technician certification program, refined aspects of the refrigerant sales restriction, adopted updated versions of ARI Standards 700 [2] and 740,[3] amended several definitions, and set forth procedures for the revocation and/or suspension of approval to certify technicians and refrigerant recovery and/or recycling equipment and revocation and/or suspension procedures for certification as a refrigerant reclaimer.

The March 12, 2004, rule exempted from the venting prohibition of section 608(c)(2) specific non-ozone-depleting substances that the Agency found did not pose a threat to the environment (69 FR 11946). The rule notably did not exempt HFC and PFC refrigerants from the venting prohibition. The rule also clarified that EPA regulations affecting the handling and sales of ozone-depleting refrigerants are applicable to blends that contain an ODS.

The January 11, 2005, rule clarified that the leak repair requirements apply to any refrigerant blend that contains an ODS (70 FR 1927). The rule amended the required practices and associated reporting/recordkeeping requirements. It also clarified certain leak repair requirements.

In December 2010 (75 FR 78558, December 15, 2010, ''proposed 2010 Leak Repair Rule''), EPA proposed changes to the leak repair requirements. EPA's intent in that proposal was to create a streamlined set of leak repair requirements that are applicable to all types of appliances containing 50 or more pounds of ozone-depleting refrigerant. The rule also proposed to reduce the applicable leak repair rates. EPA did not finalize that rule. Today's rulemaking re-proposes many of the concepts contained in the proposed 2010 Leak Repair Rule. Through today's action, EPA is withdrawing the proposed 2010 Leak Repair Rule.

Finally, on May 23, 2014 (79 FR 29682), and April 10, 2015 (80 FR 19453), EPA expanded the list of refrigerants that are exempt from the CAA venting prohibition in specific end uses. The 2014 final rule exempted the following from the venting prohibition:

—Isobutane (R–600a) and R–441A in household refrigerators, freezers, and combination refrigerators and freezers;
—Propane (R–290) in retail food refrigerators and freezers (stand-alone units only). The 2015 final rule added the following to the list of refrigerants exempt from the venting prohibition:
—Isobutane (R–600a) and R–441A in retail food refrigerators and freezers (stand-alone units only);
—Propane (R–290) in household refrigerators, freezers, and combination refrigerators and freezers;
—Ethane (R–170) in very low temperature refrigeration equipment and equipment for non-mechanical heat transfer;
—R–441A, propane, and isobutane in vending machines; and
—Propane and R–441A in self-contained room air conditioners for residential and light commercial air-conditioning and heat pumps.

C. What developments have occurred since EPA first established the National Recycling and Emission Reduction Program?

1. Phaseout of CFCs and HCFCs

In 1993 when EPA established the refrigerant management requirements of subpart F, CFCs and HCFCs were the most commonly used refrigerants, depending on the specific application. Just six months prior, in November 1992, the Parties to the Montreal Protocol accelerated the phaseout schedule for CFCs through the Copenhagen Amendment so that there would be a complete phaseout by 1996. The Copenhagen Amendment also created for the first time a phaseout schedule for HCFCs. The schedule for HCFCs was later amended and today calls for a 35 percent reduction in production and consumption from each Article 2 Party's (developed country's)

[2] The Air Conditioning and Refrigeration Institute Standard 700, *Specification for Fluorocarbons and Other Refrigerants,* contains standards for the reclamation of used refrigerants.

[3] The Air Conditioning and Refrigeration Institute Standard 740, *Performance Rating of Refrigerant Recovery Equipment and Recovery/Recycling Equipment,* contains standards for the equipment used to recover refrigerant from air-conditioning and refrigeration appliances.

cap by 2004, followed by a 75 percent reduction by 2010, a 90 percent reduction by 2015, a 99.5 percent reduction by 2020, and a total phaseout in 2030. From 2020 to 2030, production and consumption at only 0.5 percent of baseline is allowed solely for servicing existing air-conditioning and refrigeration equipment.

The United States chose to implement the Montreal Protocol phaseout schedule on a chemical-by-chemical basis. In 1993, as authorized by section 606 of the CAA, EPA established a phaseout schedule that eliminated HCFC–141b first and would greatly restrict HCFC–142b and HCFC–22 next, due to their high ozone depletion potentials (ODPs), followed by restrictions on all other HCFCs and ultimately a complete phaseout (58 FR 15014, March 18, 1993, and 58 FR 65018, December 10, 1993). EPA continues to issue allowances for the production and consumption of HCFCs that have not yet been phased out. The allowance levels reflect not only phaseout schedules but also use restrictions under section 605(a) of the CAA. The phaseout schedule and allowance levels can be found at 40 CFR part 82, subpart A.

Much as EPA established the refrigerant management program shortly before the CFC phaseout, today's proposal to update those regulations closely precedes the phaseout of HCFCs. The reasons for encouraging a viable CFC recycling program support the same approach for HCFCs. The 1993 Rule discussed a 1990 advanced notice of proposed rulemaking regarding a national CFC recycling program. As the 1993 Rule discussed, that 1990 notice emphasized that recycling is important because it would allow the continued use of equipment requiring CFCs for service past the year in which CFC production is phased out, thereby eliminating or deferring the cost of early retirement or retrofit of such equipment. Because of the continued use of these substances in existing equipment, recycling can serve as a useful bridge to alternative products while minimizing disruption of the current capital stock of equipment. (92 FR 28661).

More than twenty years later, with the experience gained through the phaseout of CFCs, reducing emissions of HCFCs and maximizing their recovery and reclamation remains just as important for ensuring the continued viability of the current stock of equipment. The transition out of CFC and now HCFC refrigerants is one reason that it is important to update the refrigerant management regulations in subpart F.

2. Use of Non-ODS Alternatives

The universe of available refrigerants has expanded dramatically since EPA first established the refrigerant management regulations in subpart F. Under the Significant New Alternatives Policy (SNAP) program (CAA section 612), EPA identifies substitutes that pose lower overall risks to human health and the environment and must prohibit the use of substitutes for which there are other available or potentially available alternatives posing lower overall risk to human health and the environment for the same use. Thus, EPA's SNAP program does not provide a static list of alternatives but instead evolves the list as the EPA makes decisions informed by our overall understanding of the environmental and human health impacts as well as our current knowledge about available substitutes. Under SNAP, EPA has reviewed over 400 substitutes in the refrigeration and air-conditioning; fire suppression; foam blowing; solvent cleaning; aerosols; adhesives, coatings, and inks; sterilants; and tobacco expansion sectors. To date, SNAP has issued 30 notices and 20 rulemakings listing alternatives as acceptable, acceptable subject to use conditions, acceptable subject to narrowed use limits, or unacceptable for those various end-uses.

On April 10, 2015, the SNAP Program listed as acceptable, subject to use conditions, three hydrocarbons, one hydrocarbon blend, and HFC–32 as substitute refrigerants in a number of refrigeration and air-conditioning end-uses (80 FR 19454). The SNAP program has also recently listed a number of additional refrigerant options, including blends of hydrofluoroolefins (HFOs) and HFCs that have lower global warming potentials (GWPs) (October 21, 2014, 79 FR 62863; July 20, 2015, 80 FR 42870), and continues to review information and issue rulemakings and notices to provide additional refrigerant options, including hydrocarbons and low-GWP HFOs.

Due to the change in the suite of acceptable refrigerants available for some end-uses, EPA anticipates that the relative amounts of different refrigerants in stocks in the United States will change, and thus that the universe of refrigerants subject to the refrigerant management program will continue to evolve. The diversity of refrigerants and the potential for cross contamination are two reasons why it is important to clarify how all refrigerants should be handled under the refrigerant management regulations in subpart F.

3. Increased Attention to HFCs as Climate Pollutants

By greatly reducing emissions of CFCs and HCFCs, domestic and international efforts to protect the ozone layer have also helped to protect global climate as these ODS are also potent GHGs. However, HFCs, which are the predominant class of compounds being used as replacements for ODS, also can have high GWPs. As their use has increased, concern has grown over the environmental damage caused by heat trapped in the atmosphere by HFCs.

On December 7, 2009, (74 FR 66496) the Administrator issued an Endangerment Finding regarding GHGs under section 202(a) of the CAA. As part of this finding, EPA concluded that the current and projected concentrations of six key well-mixed GHGs in the atmosphere—carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), HFCs, PFCs, and sulfur hexafluoride (SF_6)—endanger both the health and welfare of current and future generations. While this finding was made specifically for the purposes of section 202(a) of the CAA, EPA is cognizant of the global climate risks generally discussed in the finding in its work to reduce emissions of HFCs and other GHGs.

i. Climate Action Plan

In June 2013, the President announced the Climate Action Plan.[4] Among the many actions called for, the Climate Action Plan outlined a set of measures to address HFCs. The Climate Action Plan states: ''to reduce emissions of HFCs, the United States can and will lead both through international diplomacy as well as domestic actions.'' Part of the international diplomacy is the Amendment to the Montreal Protocol discussed below. The Climate Action Plan also directed EPA to use its authority through the SNAP program ''to encourage private sector investment in low-emissions technology by identifying and approving climate-friendly chemicals while prohibiting certain uses of the most harmful chemical alternatives.'' In July 2015, EPA finalized a rule that changed the listing status for certain substitutes previously listed as acceptable under the SNAP program (80 FR 42870). That rule changed the status for certain HFCs and HCFCs for various end-uses in the aerosols, refrigeration and air-conditioning, and foam blowing sectors. EPA made these changes based on information showing that other

[4] The President's Climate Action Plan, 2013, *https://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf.*

substitutes are available for the same uses that pose lower risk overall to human health and the environment. A copy of the Climate Action Plan is available in the docket to this rule.

Minimizing the emissions and maximizing the recovery and reuse of HFC refrigerants is consistent with the Climate Action Plan. EPA estimates that the proposed revisions will prevent annual emissions of refrigerant equivalent to 7.5 MMTCO_2eq. Of this amount 3.7 MMTCO_2eq are due to HFCs and 3.8 MMTCO_2eq are due to ODS. The significant environmental benefit to be gained by more clearly addressing HFC refrigerants is another reason why it is important to update the refrigerant management regulations in subpart F.

ii. Trends in HFC Use and Future Projections

Although HFCs represent a small fraction of current GHG emissions by weight, their warming impact per kilogram is very strong. For example, the most commonly used HFC, HFC–134a, has a GWP of 1,430, which means it traps that many times as much heat per kilogram as carbon dioxide does over 100 years. HFC emissions are projected to increase substantially and at an increasing rate over the next several decades if their production is left uncontrolled. In the United States, emissions of HFCs are increasing more quickly than those of any other GHG, and globally they are increasing 10–15% annually. At that rate, emissions are projected to double by 2020 and triple by 2030.

HFCs are also rapidly accumulating in the atmosphere. The atmospheric concentration of HFC–134a has increased by about 10% per year from 2006 to 2012, and the concentrations of HFC–143a and HFC–125, which are components of commonly-used refrigerant blends, have risen over 13% and 16% per year from 2007–2011, respectively. Annual global emissions of HFCs are projected to rise to about 6,400 to 9,900 MMTCO_2eq in 2050, which is comparable to the drop in annual GHG emissions of ODS of 8,000 MMTCO_2eq between 1988 and 2010 (UNEP, 2011). As these emissions accumulate in the atmosphere, the HFCs change the balance between energy entering the Earth's climate from the sun and energy escaping the Earth into space; the change in the net rate at which energy enters the atmosphere is called radiative forcing. By 2050, the buildup of HFCs in the atmosphere is projected to increase radiative forcing by up to 0.4 W m^{-2}. This may be as much as one-fifth to one-quarter of the expected increase in radiative forcing due to the buildup of CO_2 since 2000, according to the Intergovernmental Panel on Climate Change's (IPCC's) Special Report on Emissions Scenarios. To appreciate the significance of the projected HFC emissions within the context of all GHGs, HFCs would be equivalent to 5 to 12 percent of the CO_2 emissions in 2050 based on the IPCC's highest CO_2 emissions scenario and equivalent to 27 to 69 percent of CO_2 emissions based on the IPCC's lowest CO_2 emissions pathway.

iii. Montreal Protocol Amendments

For the past six years, the United States, Canada, and Mexico have proposed an amendment to the Montreal Protocol to phase down the production and consumption of HFCs. The United States seeks adoption of an amendment that is acceptable to all parties. Global benefits of the amendment proposal would yield significant reductions of over 90 gigatons of carbon dioxide equivalent (CO_2eq) through 2050. In 2015, a number of Parties to the Montreal Protocol have also proposed amendments to phase down global production and consumption of HFCs. These proposals were introduced by the Federated States of Micronesia on behalf of a group on Island States; the European Union; and India.

4. Petition From the Alliance for Responsible Atmospheric Policy

On January 31, 2014, the Alliance for Responsible Atmospheric Policy (the Alliance) petitioned the Agency to initiate a rulemaking to extend the section 608 refrigerant management regulations to HFCs and other substitute refrigerants. The petition advocates for consistent refrigerant management regulations that apply the same rules for ozone-depleting and non-ozone-depleting refrigerants. It argues that extending the section 608 requirements to HFCs ''would increase the environmental benefits already realized from the section 608 regulations, through reduced HFC emissions, and would complement the United States' goal of a global phase down in HFC production and consumption.'' The Alliance cites sections 608(c)(2) and 301(a) of the CAA as authority for these changes. A copy of the petition is included in the docket for this rulemaking.

While EPA is not proposing this action solely as a result of the Alliance petition, the proposed extension of the National Recycling and Emission Reduction Program to HFCs and other non-exempt substitutes, if finalized, would constitute the Agency's response to the petition.

D. What are the goals of this proposed rule?

The Agency has three goals for this rulemaking. The first is to protect the stratospheric ozone layer by reducing emissions of ODS. The second is to protect the climate system by reducing emissions of other refrigerant gases with high GWPs. This includes ODS refrigerants and many substitutes, including HFCs, that EPA has not already exempted from the CAA statutory venting prohibition. Since many substitutes have a high GWP, some as high as 10,000, reducing emissions of ODS substitutes will reduce emissions of highly potent GHGs. While the current regulations in subpart F contain some provisions implementing the venting prohibition for substitutes for ODS, such as a general prohibition on the knowing release of such substances, with certain enumerated exceptions, they do not have any other specific use and handling requirements for ODS substitutes. As explained in more detail below, EPA is proposing to revise subpart F to include such provisions to help more fully and effectively implement the venting prohibition in section 608(c) of the CAA. Finally, EPA is proposing changes to the regulations in subpart F to improve their effectiveness, including increasing compliance and enforceability both for ODS and ODS substitutes.

1. Protecting the Stratospheric Ozone Layer

The proposed changes would reduce the use and emission of ODS, maximize the recapture and recycling of such substances, and further implement the prohibition on knowingly venting or releasing ODS refrigerants during the maintenance, service, repair, or disposal of appliances. EPA estimates that this proposal will result in annual reductions in emissions of approximately 116 ODP-weighted metric tons. A separate support document *Analysis of the Economic Impact and Benefits of Proposed Revisions to the National Recycling and Emission Reduction Program* contains a full discussion of the benefits and is available in the docket.

Stratospheric ozone depletion decreases the atmosphere's ability to protect life on the Earth's surface from the sun's UV radiation. The links between stratospheric ozone depletion and public health are well established. The *Scientific Assessment of Ozone Depletion,* prepared by the Scientific

Assessment Panel to the Montreal Protocol, and *Environmental Effects of Ozone Depletion and its Interactions with Climate Change,* prepared by the Environmental Effects Assessment Panel to the Montreal Protocol provide comprehensive information regarding the links between emissions of ODS, ozone layer depletion, UV radiation, and human health effects. Both documents are available in the docket for this rule. Adverse health effects associated with exposure to UV radiation include skin cancer, cataracts, and immune suppression.

The most common forms of skin cancer are strongly associated with UV radiation, and UV exposure is the most preventable cause of skin cancer (U.S. Department of Health and Human Services. The Surgeon General's Call to Action to Prevent Skin Cancer. Washington, DC: U.S. Department of Health and Human Services, Office of the Surgeon General; 2014). Skin cancer is the most common form of cancer in the United States, with more than 3.5 million new cases diagnosed annually (American Cancer Society, Cancer Facts and Figures, 2015). The number of new cases of melanoma, the most serious form of skin cancer, has been increasing. Rates for new cases of melanoma have been rising on average 1.4% each year over the last 10 years (National Cancer Institute, SEER Stat Fact Sheets: Melanoma of the Skin, available at *http://seer.cancer.gov/statfacts/html/melan.html*, accessed May 5, 2015). In 2015, it is estimated that 70,000 Americans will be diagnosed with melanoma and almost 10,000 will die from the disease (American Cancer Society, Cancers Facts and Figures, 2015).

Non-melanoma skin cancers are less deadly than melanomas. Nevertheless, left untreated, they can spread, causing disfigurement and more serious health problems. There are two primary types of non-melanoma skin cancers. Basal cell carcinomas are the most common type of skin cancer tumors. Basal cell carcinoma grows slowly, and rarely spreads to other parts of the body. It can, however, penetrate to the bone and cause considerable damage. Squamous cell carcinomas are tumors that may appear as nodules or as red, scaly patches. This cancer can develop into large masses and can spread to other parts of the body.

Other UV-related skin disorders include actinic keratoses and premature aging of the skin. Actinic keratoses are skin growths that occur on body areas exposed to the sun. The face, hands, forearms, and neck are especially susceptible to this type of lesion. Although premalignant, actinic keratoses are a risk factor for squamous cell carcinoma. Chronic exposure to the sun also causes premature aging, which over time can make the skin become thick, wrinkled, and leathery.

Research has shown that UV radiation increases the likelihood of certain cataracts. (Taylor, H.R., et al., 1988. *Effect of ultraviolet radiation on cataract formation,* New England Journal of Medicine, 319, 1429–33; West, S. et al., 2005. *Model of Risk of Cortical Cataract in the US Population with Exposure to Increased Ultraviolet Radiation due to Stratospheric Ozone Depletion,* American Journal of Epidemiology, 162, 1080–1088.) Cataracts are a form of eye damage in which a loss of transparency in the lens of the eye clouds vision. If left untreated, cataracts can lead to blindness. Although curable with modern eye surgery, cataracts diminish the eyesight of millions of Americans. Other kinds of eye damage caused by UV radiation include pterygium (*i.e.,* tissue growth that can block vision), skin cancer around the eyes, and degeneration of the macula (*i.e.,* the part of the retina where visual perception is most acute).

Policies protecting the stratospheric ozone layer have been effective in preventing these diseases and protecting the health of the American people. EPA uses its Atmospheric and Health Effects Framework (AHEF) model to estimate the benefits of ODS emissions reductions by modeling the number of cases of skin cancer and the number of deaths in Americans born between 1890 and 2100 given different ODS emissions scenarios. By comparing the health effects in a scenario without the Montreal Protocol to one with the treaty's controls, EPA estimates that the Montreal Protocol will prevent over 283 million cases of skin cancer in the United States. Americans will also suffer more than 45 million fewer cataracts and one million fewer deaths from skin cancer due to the treaty's protections, compared with a world with no policy controls. This analysis, found in the EPA document *Updating Ozone Calculations and Emissions Profiles for Use in the Atmospheric and Health Effects Framework Model* is in the docket.

2. Reducing Emissions of Greenhouse Gases

The second goal of this proposed rule is to reduce the emission of GHGs that contribute to climate change. Many refrigerants, including ODS and substitutes for ODS, are potent GHGs, having GWPs thousands of times higher than that of carbon dioxide (CO_2), which has a GWP of one. For example, R–404A, a commonly used HFC refrigerant blend, has a GWP of 3,922. Other common HFC refrigerants, with their GWPs, include R–134a (1,430), R–410A (2,088), R–407A (2,107), and R–507A (3,985). Explicit and more stringent standards for the use, recovery, and recycling of these substitute refrigerants during maintenance, servicing, repair, or disposal of appliances will lead to fewer emissions of these high-GWP chemicals. EPA estimates that the proposed changes will reduce GWP-weighted emissions by approximately 7.5 $MMTCO_2eq$ per year

GHGs cause climate change by trapping heat on Earth. The Earth is constantly receiving energy from the sun in the form of radiation, including visible light, infrared, ultraviolet, and other forms of energy. At the same time, energy is radiating away into space, mostly as infrared radiation. Over long periods of time, the amount of energy arriving on Earth and the amount leaving into space have been about the same, and so the environment has generally not gotten much warmer or much colder very quickly. However, the increase of GHGs in the atmosphere has changed this balance, because these gases do not block most of the forms of radiation coming to Earth from the sun, but they do absorb or scatter the radiation trying to leave Earth into space, trapping some of it on Earth. Thus, more energy comes into the Earth's climate system than leaves it, and the atmosphere, oceans, and land become warmer, just like the inside of a greenhouse. While parts of the Earth get warmer and colder from day to day with weather, from month to month with the seasons, from year to year due to large scale phenomena like El Niño, or even decade to decade as sunspots come and go, the trapping of heat by GHGs raises the average temperature over the whole globe over and above these natural fluctuations, over a relatively short timeframe. The increase in the total heat energy in the climate system does not simply make the environment warmer; because water and air with more heat energy in them move more, atmospheric and sea currents change, and winds increase. Because warm water expands and glaciers melt, sea level rises, and because evaporation increases with more energy, rainfall and flooding can increase in some areas even as other areas face increased risk of drought and wildfire due to changes in wind patterns. For more information on GHGs and climate change in the

United States, visit *www.epa.gov/climatechange.*

3. Improving Rule Effectiveness

EPA's third goal of this proposed rule is to improve the clarity and effectiveness of the regulations in subpart F. Achieving the health and environmental benefits of these rules depends on widespread compliance.

EPA has begun an initiative to improve the effectiveness of its rules called ''Next Generation Compliance.'' This is an integrated strategy designed to bring together the best thinking from inside and outside EPA on how to structure regulations and permits, combined with new monitoring and information technology, expanded transparency, and innovative enforcement. The vision for this initiative is to better motivate the regulated community to comply with environmental laws and inform the public about their performance. Most importantly, this initiative will help ensure that all Americans are protected from significant risks to human health and the environment and have access to information that allows them to more fully engage in environmental protection efforts.

The Agency has identified several interconnected components in the Office of Enforcement and Compliance's 2014–2017 strategic plan for Next Generation Compliance that can improve the effectiveness of rules:

• Effective Regulations: Design regulations that are clear, as easy to implement as possible, and that contain self-reinforcing drivers. For example, where possible, design regulations such that regulated facilities can take steps to monitor their own performance to prevent violations, or be certified by an independent 3rd party.

• Advanced Monitoring: Use advanced monitoring technology for the government, industry, and the public to more easily find information on pollutant discharges/emissions, environmental conditions, and noncompliance.

• Electronic Reporting: Implement electronic systems to make reporting easier, more efficient, and less costly. For the user, these systems offer speed, convenience, expanded information choices, and filing capabilities. For government, they offer the ability to increase transparency, improve our ability to spot pollution and compliance issues, and respond quickly to emerging problems.

• Transparency: Make the information we have today more accessible, and make new information obtained from advanced monitoring and electronic reporting publicly available.

• Innovative Enforcement: Use Next Generation Compliance principles and tools in enforcement planning and cases.

The National Recycling and Emission Reduction Program under section 608 of the CAA has incorporated compliance principles similar to those under this initiative since its inception. There are numerous self-reinforcing requirements, including the refrigerant sales restriction. By requiring anyone purchasing an ODS refrigerant to be certified, EPA effectively enforces the requirement that anyone maintaining, servicing, repairing, and disposing of an appliance be certified (excluding those disposing of small appliances, MVACs and MVAC-like appliances).

Another Next Generation Compliance principle that has been in the 608 refrigerant management program since the beginning is third party certification. These rules require certification of refrigerant recovery equipment by independent third parties (*i.e.,* UL and AHRI). Third party certifiers verify that recovery equipment meets the required minimum standards. Additionally, this ensures that technicians who use these devices to recover refrigerant are also using equipment that will meet the minimum refrigerant evacuation requirements if used following the manufacturer's instructions.

The Agency and industry have more than 20 years of experience implementing and operating under these regulations. Through that experience, it has become clear that there are sections of the regulations that could be improved or be clarified. This proposal attempts to clarify and simplify where possible.

One way that EPA seeks to provide simplicity and clarity to the regulated community, the public, and state, local, and Tribal governments is to treat ODS and substitute refrigerants similarly where it is appropriate to do so. EPA is therefore proposing to extend the existing requirements, as amended, to HFCs and other substitutes, as appropriate. In addition, EPA is proposing to revise many provisions of the regulations for clarity and to restructure the regulations to make it easier to find requirements for different affected entities. EPA is grouping the recordkeeping and reporting requirements closer to where the requirements are listed and removing outdated or unnecessary requirements. These proposed changes will extend to ODS substitutes those requirements that align with Next Generation Compliance principles and make it easier for the regulated community to understand what refrigerants are covered and what the requirements are, making it easier to comply with the regulation.

For each of the changes proposed in this notice, EPA solicits comments on the following:

• Implementation of the proposal: What challenges are anticipated in implementing or complying with the proposed rule? What steps might we consider to minimize those challenges?

• The clarity of the proposal: Is there anything that is unclear about what the proposed rule is asking the regulated community to do? When responding to this questions, commenters should describe what is confusing about the proposal, not what they do not like.

• The design of the rule: Is the proposed rule designed in a way to maximize the environmental benefits for the implementation effort required? Are there alternate approaches to features of this rule that would achieve the same environmental benefits or maximize the environmental benefits but would be easier to implement? If so, please explain or describe those approaches.

• The clarity of the regulatory text: Are any of the terms, definitions, or specific requirements in the regulatory language unclear or confusing? Which ones and what is confusing about them?

• The need for a comprehensive compliance guide or other compliance tools: What tools (brochures, videos, etc.) could EPA reasonably develop to aid the regulated community in complying with the rule?

• Incentives for going above and beyond compliance: What changes could EPA make to the proposed rule that would encourage environmental performance beyond the minimum requirements of the rule?

• Monitoring, measurement, and reporting: Are the monitoring requirements designed and sufficiently explained to ensure that regulated parties are fully aware of their performance, and to trigger action in the case of actual or potential noncompliance? Can monitoring data or other information about performance be made easily available to regulators and/or to the public in ways that would be useful and meaningful?

E. Stakeholder Engagement

EPA conducted extensive outreach to stakeholders affected by the refrigerant management regulations under section 608 of the CAA. In November 2014, EPA hosted an open meeting in Washington, DC, to discuss the Agency's goals and solicit feedback from stakeholders. More than 50 participants attended the meeting. To facilitate stakeholder preparation for the meeting, EPA widely distributed a concept note that provided an update on progress to implement the President's Climate Action Plan and laid out questions the Agency was considering as it was developing this proposed rule. The slides from the presentation, the concept note, and a summary of the comments are included in the docket.

After the November stakeholder meeting, EPA held approximately 50 meetings with individual businesses, trade associations, and environmental organizations. The Agency also attended several conferences and association meetings to provide information, solicit input, and answer questions. A full list of meetings and conferences is included in the docket.

Finally, EPA reviewed past feedback on the proposed 2010 Leak Repair Rule to amend the leak repair regulations. A summary of comments received on the proposed 2010 Leak Repair Rule is included in the docket. EPA also reviewed comments on the 1998 proposal to extend the full suite of refrigerant management requirements under subpart F to HFCs and PFCs and is including a copy of those comments it reviewed from that proposal in the docket. EPA notes that the Agency is not treating comments on either of these prior proposals as comments on this rule. Therefore, to be formally considered as comments on this proposal, stakeholders must provide comments specifically to today's action even if the concepts proposed are the same or similar to those contained in comments on actions that the Agency has proposed previously.

F. What are the major changes EPA is proposing?

EPA is proposing numerous changes to the National Recycling and Emission Reduction Program. Some of these changes are intended to strengthen the existing program, in particular by requiring a number of industry best practices. Others are intended to extend, as appropriate, the regulations to HFCs and other substitutes for ODS. Still other changes are meant to improve the effectiveness of the regulations. This section briefly introduces the reader to the major proposed changes. The reader can find detailed discussions of all of the proposals in Section IV of this notice.

1. Extend the Regulations To Cover Substitute Refrigerants

Section 608(c)(1) of the CAA, effective July 1, 1992, makes it ''unlawful for any person, in the course of maintaining, servicing, repairing, or disposing of an appliance or industrial process refrigeration, to knowingly vent or otherwise knowingly release or dispose of any class I or class II substance used as a refrigerant in such appliance (or industrial process refrigeration) in a manner which permits such substance to enter the environment.'' This provision excludes ''de minimis releases associated with good faith attempts to recapture and recycle or safely dispose of such substances'' from the prohibition. Section 608(c)(2) extends the provisions of paragraph (c)(1) to substitutes for ODS refrigerants, effective November 15, 1995. Collectively, this self-effectuating prohibition, commonly referred to as the ''venting prohibition,'' is a central component of EPA's refrigerant management program.

EPA's current regulations at § 82.154(a) incorporate the venting prohibition, as well as the *de minimis* exemption. Then, the last sentence in § 82.154(a)(2) provides that ''refrigerant releases shall be considered de minimis only if they occur when'' (1) following the required practices in § 82.156, (2) using certified recovery and/or recycling equipment that meet the requirements of § 82.158, and (3) technicians are certified under the requirements in § 82.161; or when following the requirements of subpart B. In effect, consistent with the second sentence of section 608(c)(1), under these regulations EPA has defined *de minimis* releases of *refrigerants* during maintaining, servicing, repairing, or disposing of an appliance as those that occur when the refrigerant management regulations at 40 CFR part 82, subpart F or subpart B are followed. The term *refrigerant* is defined in § 82.152 for purposes of this subpart to mean any substance consisting in part or whole of a class I or class II ODS that is used for heat transfer purposes and provides a cooling effect. The term does not include substitute substances such as HFCs or ammonia, among others. Under these regulations, if someone maintaining, servicing, repairing, or disposing of an appliance or IPR releases a class I or class II refrigerant in the course of following these requirements, they would not be in violation of the venting prohibition, but all other releases of ODS refrigerants during such activities would violate the venting prohibition.

While the conditions for the application of the *de minimis* exemption has been clearly elaborated on in the regulations for class I and class II refrigerants, and while the regulations expressly state what practices or measures can be employed to qualify for it, the regulations are less clear for substitute refrigerants like HFCs. Section 82.154(a)(2) states that ''[d]e minimis releases associated with good faith attempts to recycle or recover . . . non-exempt substitutes are not subject to this prohibition'' but does not provide any guidance about what constitutes such a ''good faith attempt.'' In contrast to ODS refrigerants, the regulations do not contain provisions for non-exempt substitute refrigerants to establish that releases that occur when following certain regulatory requirements are *de minimis*. Accordingly, regulated entities are left without clear guidance on how to abide by the venting prohibition as it relates to non-exempt substitutes.

Through this rulemaking, EPA is proposing to extend requirements of the National Recycling and Emission Reduction Program to non-exempt substitutes and to clarify that the actions required to qualify for the *de minimis* exemption for non-exempt substitute refrigerants are the same as those for ODS refrigerants. As some release of substitute refrigerants is inevitable during the maintenance, servicing, repair, and disposal of appliances, these changes would give regulatory certainty to the many stakeholders that are already properly recovering substitute refrigerants during these activities, and would likely require only minimal if any change in business practices for them. These changes would also give stakeholders that are not following such practices for substitute refrigerants additional incentive to do so because it would describe how the venting prohibition applies to substitute refrigerants.

2. Strengthen Leak Repair Requirements

This proposal would strengthen the requirement to repair leaking appliances containing 50 or more pounds of refrigerant, currently at § 82.156(i), to reduce emissions of ODS. Additionally, EPA is proposing to extend the amended requirements to HFCs and other substitutes to reduce emissions. The Agency also is aiming to make the requirements more proactive at preventing leaks by requiring industry best practices (*i.e.,* leak inspections).

EPA is proposing to lower applicable leak rates from their current levels of 35 percent for commercial refrigeration appliances and IPR and 15 percent for comfort cooling appliances to 20 percent and 10 percent, respectively. Based on stakeholder input and data collected by the California Air Resources Board (CARB) and other sources, these levels are reasonable and will result in leaks being repaired sooner than under the current approach. This is especially true for appliances containing substitute refrigerants, which are not currently covered by the leak repair provisions.

Some systems are leaking considerable amounts of refrigerant despite requirements to repair or retrofit leaking appliances. Based on feedback from CARB and a review of its data, EPA is proposing to create a two-year leak limit. Under this proposal, appliances containing 50 or more pounds of ODS or substitute refrigerant would not be allowed to leak more than 75 percent of the appliance's full charge in each of two consecutive 12-month periods. The CARB data indicate that few appliances leak above this level in any given year, and that these appliances are responsible for a large proportion of emissions. This requirement would likely affect few appliances, but would encourage owners or operators of appliances to more comprehensively repair or retire them when leaking such a substantial amount of refrigerant for two consecutive years.

EPA is also proposing to require periodic leak inspections to help identify leaks earlier. Regular leak inspections are widely recognized as a best practice to minimize refrigerant emissions. Under this proposal, all appliances with a full charge of 50 or more pounds of ODS or substitute refrigerant would have to conduct annual leak inspections to determine if the appliance is leaking. Commercial refrigeration appliances and IPR with a full charge of 500 or more pounds of ODS or substitute refrigerant would be required to conduct a leak inspection every three months. Alternatively, owners or operators can forgo periodic leak inspections by installing automatic leak detection systems and having it inspected and calibrated annually.

3. Extend the Sales Restriction to Substitute Refrigerants, With an Exception for Small Cans of MVAC Refrigerant

The existing regulations restrict the sale of ODS refrigerant to certified technicians. EPA is proposing to extend the sales restriction to substitute refrigerant sold in the United States. Due to the large do-it-yourself (DIY) community that have long serviced their personal MVACs, EPA has considered less costly ways to avoid restricting the sale of MVAC refrigerants to certified technicians while still reducing releases of non-exempt refrigerants. Therefore, EPA is proposing to exempt the sale of small cans (two pounds or less) of substitute refrigerant for the servicing of MVACs if the cans have a self-sealing valve. Self-sealing valves have been successful in reducing emissions during servicing in California where they are currently required.

4. Establish Recordkeeping for Appliances Containing Five to 50 Pounds of ODS and Substitute Refrigerant

The existing regulations have recordkeeping requirements for the disposal of appliances that contain 5 pounds or less of ODS refrigerant and those that contain 50 or more pounds of ODS refrigerant. As discussed above, EPA is proposing to extend those current recordkeeping requirements to appliances containing substitutes. In addition, EPA is proposing to require that technicians, or the company employing technicians, keep records of the amount of ODS and substitute refrigerant recovered when disposing of appliances that fall in the gap between those two size categories. EPA is also proposing to require recordkeeping documenting the quantity of ODS and substitute refrigerant transferred for reclamation or destruction that was recovered from those mid-sized appliances. Based on feedback from stakeholders when developing this rule, these records are often already maintained by contractors that are properly recovering refrigerant. Some stakeholders that adhere to the proper evacuation requirements have encouraged EPA to enforce against HVACR contractors that simply vent the refrigerant. These proposed records would improve compliance with the venting prohibition and facilitate enforcement against technicians who disregard the recovery requirements.

5. Update the Technician Certification Program

Under the existing regulations, technicians must be certified in order to work on appliances in a manner that could release ODS refrigerants to the environment. EPA is proposing to extend those requirements to appliances containing non-exempt substitutes. Because the questions on the certification exam are over twenty years old and because EPA is proposing to revise the existing program though this rule, EPA is planning to update and develop new questions for use to certify technicians.

EPA is also proposing to require that certifying organizations publish lists or create online databases of technicians that they certify. In addition to providing transparency to technicians' customers and refrigerant distributors and wholesalers, this requirement would also make it easier for technicians to replace lost credentials. The amount of time spent by technicians trying to identify the organization that certified them is significant. EPA and certifying programs also spend a significant amount of time helping technicians who have lost their certification card. Published lists or online databases of certified technicians would help make this process more efficient.

6. Improving Readability and Compliance and Restructuring the Requirements

EPA is proposing to make extensive revisions to the regulations in subpart F to more clearly state the requirements of the National Recycling and Emission Reduction Program and to remove potentially ambiguous language. These proposed edits will improve compliance among the regulated community and facilitate enforcement by EPA.

First, EPA is proposing edits that would apply the principles of plain writing, based on guidance from the Office of the Federal Register. For example, EPA is proposing to add subheadings and plain English terms where appropriate. EPA's intent with many of these edits is to improve readability, not change the content. For edits that are substantive, EPA discusses these proposed changes in this preamble.

Second, EPA is proposing to divide § 82.156 ''Required Practices'' into three sections based on the topic. This proposal would create a new § 82.155 for provisions related to the safe disposal of small appliances, MVACs, and MVAC-like appliances. Section 82.156 would be amended to contain provisions related to the proper evacuation of refrigerant from appliances. This proposal would also create a new § 82.157 for provisions related to leak repair. EPA is also proposing to remove most of § 82.166, which currently contains the recordkeeping and reporting requirements for subpart F, and move specific recordkeeping and reporting provisions to the sections relevant to each record.

Third, EPA is proposing to remove unnecessary content such as provisions that have expired, definitions that simply restate the regulatory provisions, and definitions to terms that are no longer used. The rule would also combine and streamline repetitive text. Along those lines, this proposal would merge tables 2 and 3 in § 82.158 into a single table.

EPA is providing a red-line version of the regulatory text in the docket that shows the edits to the current regulations to allow the reader to identify the specific proposed changes. EPA solicits comments generally on how to simplify and clarify the requirements in subpart F. Aside from the specific substantive changes discussed in this notice, EPA's intent is not to alter or reopen the substantive content of these regulations. Therefore, EPA also requests comments on the specific proposed edits to the regulatory text to make sure that they do not unintentionally change the underlying meanings or requirements of the rule.

III. The Clean Air Act and EPA's Authority for the Proposed Revisions

This section contains a summary of the relevant CAA provisions and a general description of how EPA interprets them to authorize the proposed revisions in this notice. More specific discussions of EPA's authority for certain revisions are included in further detail in the sections describing the corresponding revisions.

Section 608 of the CAA requires EPA to establish a comprehensive program to limit emissions of ozone-depleting refrigerants. Section 608 also prohibits the knowing release or disposal of ozone-depleting refrigerants and their substitutes during the maintenance, service, repair, or disposal of air-conditioning and refrigeration appliances or IPR. Section 608 is divided into three subsections.

Section 608(a) requires EPA to promulgate regulations establishing standards and requirements for the use and disposal of class I and class II substances during the maintenance, service, repair, or disposal of air-conditioning and refrigeration appliances or IPR containing ODS. Such regulations shall include requirements to reduce the use and emission of ODS to the lowest achievable level, and to maximize the recapture and recycling of such substances. Section 608(a) further provides that ''such regulations may include requirements to use alternative substances (including substances which are not class I or class II substances) or to minimize use of class I or class II substances, or to promote the use of safe alternatives pursuant to section [612] or any combination of the foregoing.''

Section 608(b) requires that the regulations issued pursuant to subsection (a) contain requirements for the safe disposal of class I and class II substances, including requirements that such substances shall be removed from such appliances, machines, or other goods prior to the disposal of such items or their delivery for recycling.

Section 608(c) establishes a self-effectuating prohibition, commonly called the ''venting prohibition,'' that generally speaking, makes it unlawful to knowingly release ODS and substitute refrigerants into the environment while servicing or disposing of air-conditioning or refrigeration equipment. More specifically, section 608(c)(1), effective July 1, 1992, makes it unlawful for any person in the course of maintaining, servicing, repairing, or disposing of an appliance or IPR to knowingly vent, release, or dispose of any ODS used as a refrigerant in such equipment in a manner that permits that substance to enter the environment. The statute exempts from this prohibition ''[d]e minimis releases associated with good faith attempts to recapture and recycle or safely dispose'' of such a substance. Section 608(c)(2) extends the provisions of (c)(1), including the prohibition on venting to substitutes for class I and class II refrigerants, effective November 15, 1995, unless the Administrator determines that such venting, release, or disposal ''does not pose a threat to the environment.'' EPA has determined through prior rulemakings that specific substances do not pose a threat to the environment when vented, released, or disposed of and has exempted those specific substitutes from the venting prohibition. The full list of substitutes that EPA has exempted from this prohibition is at § 82.154(a).[5]

On May 14, 1993, EPA published regulations implementing subsections (a), (b), and (c)(1) for ODS (58 FR 28660). These regulations include evacuation requirements for appliances being serviced or disposed of, standards and testing requirements for recovery and/or recycling equipment, certification requirements for technicians, purity standards and testing requirements for used refrigerant sold to a new owner, certification requirements for refrigerant reclaimers, leak repair requirements, and requirements for the safe disposal of appliances that enter the waste stream with the charge intact. This rule also stated that the Agency interprets ''*de minimis*'' to mean releases that occur while the recycling and recovery requirements of regulations under sections 608 and 609 are followed.

Section 608 of the CAA provides the primary statutory basis for the standards and requirements proposed in these regulations. The statutory standards under section 608(a) against which the regulations concerning the use and disposal of ozone-depleting substances are to be measured is whether they ''reduce the use and emission of such substances to the lowest achievable level'' and ''maximize the recapture and recycling of such substances.'' In the context of recycling, these standards are complementary, *i.e.,* maximizing recycling will also mean reducing the use and emission of these substances to the lowest achievable level. These standards also bear a relationship to the *de minimis* releases permitted in section 608(c). In other words, emissions that occur while complying with EPA's recovery and recycling requirements, which result in the lowest achievable level of emissions, are considered *de minimis.*

The phrase ''lowest achievable level'' as used in section 608(a)(3) is not clear on its face as to whether economic factors should be considered in determining what is the ''lowest achievable level.'' Title VI does not further explain or define the term nor does it expressly state whether economic factors may or must be considered. Thus, EPA has discretion to adopt a reasonable interpretation. EPA has previously interpreted this phrase to allow the consideration of economic factors. *See* 58 FR 28659, 28667 (May 14, 1993). EPA is not proposing to change that interpretation and has considered economic as well as technological factors in the development of this proposed rule. This is consistent with the statement made on the floor of the House of Representatives by Representative Ralph Hall shortly before passage of the Clean Air Act Amendments of 1990 that ''[i]n promulgating regulations [under section 608] the Administrator shall take into account the extent to which emissions reductions can be achieved, the costs and benefits of implementing available controls, and the time before which certain uses may no longer rely on the covered substances'' (Cong Rec H 12907 (Oct 26, 1990)).

The phrase ''de minimis releases associated with good faith attempts to recapture and recycle or safely dispose of any such substance'' as used in section 608(c)(1) and as applied to substitutes through section 608(c)(2) is similarly not clear on its face as to whether economic factors may be considered in determining what is *de minimis.* Title VI does not further address this issue. Thus, EPA has discretion to adopt a reasonable interpretation. EPA interprets this phrase to allow the consideration of economic factors. The Senate Manager's

[5] EPA is using the term ''non-exempt substitute'' in this notice to refer to substitute refrigerants that have not been exempted from the venting prohibition under CAA section 608(c)(2) and 40 CFR 82.154(a).

Statement for the Clean Air Act Amendments of 1990 indicates that ''the exception is included to account for the fact that in the course of properly using recapture and recycling equipment, it may not be possible to prevent some small amount of leakage'' (Cong. Rec. S 16948 (Oct. 27, 1990)). EPA does not read this statement as expressing an intent that the Agency consider only technological factors in setting standards for recapture and recycling equipment and the proper use of such equipment. Rather, EPA understands it as meaning that once those standards are set, only the small amount of emissions that cannot be prevented by following such standards should be exempted.

Because the statutory language does not dictate a particular means of taking economic factors into account, if at all, EPA has discretion to adopt a reasonable means. In developing this proposed rule, EPA has not applied a strict cost-benefit test, but rather has focused primarily on the state of air conditioning and refrigeration best practices and recovery technology, while also giving consideration to costs and benefits. The fact that industry has identified and uses these best practices indicates they are at least reasonable from a cost perspective. As discussed in the appliance maintenance and leak repair section (section VI.F of this preamble), EPA considered what is achievable from a technical perspective, while also considering the costs of the proposed requirements and the benefits from those changes when determining whether to establish new requirements. See the technical support document in the docket for sensitivity analyses conducted on various options.

Generally, the proposed requirements reflect the performance of the lowest-emitting equipment and practices in each sector under commonly encountered conditions in the field, taking into account that the variability of those conditions is significant in each air-conditioning and refrigeration sector. For example, some appliances generally have more leaks than others. An industrial process refrigeration appliance can have thousands of pounds of refrigerant running through miles of piping, resulting in numerous opportunities for leaks to occur, whereas a household refrigerator typically has about one pound of refrigerant in a hermetically sealed refrigerant loop that rarely leaks. EPA has proposed requirements that reflect that difference.

EPA also considered costs in many specific aspects of this proposal. For example, EPA considered the costs of extending the refrigerant sales restriction to small cans of non-exempt substitutes used for MVAC servicing. Based on those considerations, EPA decided to propose requiring manufacturers install self-sealing valves on small cans rather than limiting the sale of small cans to certified technicians only. Finally, EPA relied heavily on the existing program and requirements already in place for ODS refrigerants rather than developing a new and separate set of requirements for non-exempt substitutes. This will allow the regulated community to use existing compliance procedures where applicable to reduce emissions of non-exempt substitutes rather than having to develop wholly new approaches to managing compliance.

Authority for Extending 608 to Substitutes

In this rule, EPA is proposing to extend, as appropriate, provisions of the refrigerant recovery and/or recycling regulations, which currently only apply to ODS refrigerants, to non-exempt substitute refrigerants. EPA's authority for this action rests largely on section 608(c), which EPA interprets, as described below in more detail, to provide authority to promulgate regulations to interpret, implement, and enforce the venting prohibition, as it applies to both ODS refrigerants and non-exempt substitutes. EPA's authority to issue implementing regulations for section 608(c) is supplemented by section 301(a), which provides authority for EPA to ''prescribe such regulations as are necessary to carry out [the EPA Administrator's] functions under this Act.'' In addition, EPA's authority to extend the recordkeeping and reporting requirements to substitutes is supplemented by section 114, which provides authority to the EPA Administrator to require recordkeeping and reporting in carrying out provisions of the CAA. Finally, as explained in more detail below, the extension of requirements under 608 to non-exempt substitutes in this proposal is also provided in section 608(a) because it would reduce emissions of ODS refrigerants.

Section 608 of the CAA is ambiguous with regard to EPA's authority to establish refrigerant management regulations for substitute refrigerants. As Congress has not precisely spoken to this issue, EPA has the discretion to adopt a permissible interpretation of the CAA. *Chevron, U.S.A., Inc.* v. *Natural Res. Def. Council, Inc.,* 467 U.S. 837, 843–44 (1984). Primarily under the authority of section 608(a), EPA has established standards for the proper handling of ODS refrigerants during the maintenance, service, repair, or disposal of an appliance to maximize the recovery and/or recycling of such substances and reduce the use and emission of such substances. Section 608(a) expressly requires EPA to promulgate regulations that apply to class I and class II substances, but is silent on whether its requirements apply to substitute substances. On the other hand, section 608(c)(2) contains provisions for substitute refrigerants which parallel those for ODS refrigerants in section 608(c)(1). For instance, as for ODS refrigerants under section 608(c)(1), section 608(c)(2) prohibits knowingly venting, releasing, or disposing of any substitute refrigerant during the maintenance, service, repair, or disposal of an appliance in a manner which permits the substance to enter the environment.[6] This creates a tension or ambiguity because the regulated community is subject to an explicit and self-effectuating prohibition on venting or releasing non-exempt substitute refrigerants while servicing or disposing of equipment but at the same time is not explicitly required by section 608(a) to recover and recycle substitute refrigerant prior to servicing or disposing of equipment or to engage in any of the practices or behaviors that EPA has established to minimize the emission and release of ODS refrigerants.

Moreover, the Agency is aware that some amount of refrigerant, whether ODS or substitute, is inevitably released during the maintenance, servicing, repair, and disposal of air-conditioning or refrigeration appliances or equipment. Without a clear regulatory framework for determining what requirements apply during the maintenance, servicing, repair, and disposal of such equipment containing a non-exempt substitute refrigerant, it could be unclear to the regulated community and the public whether such releases violate the venting prohibition and what steps must be taken to comply with CAA obligations for such substitute refrigerants in undertaking such actions. Accordingly, it is appropriate to issue regulations to clarify how the venting prohibition and the *de minimis* exemption apply to non-

[6] As noted above, this venting prohibition does not apply to substitutes for which the Administrator has made a determination that such venting, release, or disposal ''does not pose a threat to the environment'' under CAA 608(c)(2). As indicated elsewhere in this proposal, EPA is not proposing to extend the requirements of the refrigerant management program to substitutes that have been exempted from the venting prohibition in this action.

exempt substitute refrigerants, as is proposed in this rulemaking. In doing so, EPA intends to clarify that the regulated community may rely on the *de minimis* exemption to the venting prohibition if they follow the amended requirements in subpart F.

Consistent with the language of sections 608(c)(1) and (2), these revisions aim to avoid knowing releases of non-exempt substitute refrigerants into the environment in the course of maintaining, servicing, repairing, or disposing of an appliance or IPR, unless those releases meet the criteria for *de minimis* releases. Section 608(c)(1) provides an exemption from the venting prohibition for ''[d]e minimis releases associated with good faith attempts to recapture and recycle or safely dispose of any such [class I or class II] substance.'' In this context, EPA interprets this provision to exempt releases that occur while the recycling and recovery requirements of regulations under sections 608 and 609 are followed and has promulgated regulations that implement that interpretation. In particular, as explained above, EPA has incorporated both the venting prohibition and the *de minimis* exemption into the regulations at § 82.154(a). Further, the last sentence in § 82.154(a)(2) provides that ''refrigerant releases shall be considered de minimis only if they occur when'' enumerated regulatory practices in either § 82.156, § 82.158, and § 82.161, or, alternatively, subpart B are followed. These requirements are the ones established in 1993, as explained above and as periodically amended. The term *refrigerant,* however, is defined in § 82.152 for purposes of this subpart to mean any substance consisting in part or whole of a class I or class II ozone-depleting substance that is used for heat transfer purposes and provides a cooling effect. As such, this term does not include substitute substances. In addition, EPA has not yet applied the recycling and recovery requirements to non-ODS substitutes, and therefore these provisions which make clear how to qualify for the *de minimis* exemption for ODS refrigerants do not currently apply for substitute refrigerants.

Section 608(c) can be interpreted such that the statutory *de minimis* exemption contained in section 608(c)(1) also applies to substitute refrigerants. Section 608(c)(2) states that, effective November 15, 1995, ''paragraph 1 shall also apply'' to the venting, release, or disposal of any substitute substance for class I or class II substances. As section 608(c)(2) incorporates ''paragraph 1'' it is reasonable to interpret it to also contain this *de minimis* exemption. However, the CAA does not explicitly address what should be considered ''good faith attempts to recapture and recycle or safely dispose'' for substitute refrigerants. Moreover, the statutory provisions that require EPA to promulgate regulations addressing recapturing and recycling requirements and safe disposal requirements in section 608(a) and 608(b) expressly mention that they apply to ODS refrigerants but are silent as to application to substitute refrigerants. This silence and the corresponding tension between these provisions creates an ambiguity in section 608 and a gap that EPA may fill with a permissible interpretation. *Chevron, U.S.A., Inc.* v. *Natural Res. Def. Council, Inc.,* 467 U.S. 837, 843–44 (1984). While Congress did not expressly mention substitutes in section 608(a), EPA does have authority under the Act to establish regulations creating a program to address management of ODS refrigerants and their substitutes, including authority to implement the venting prohibition under section 608(c) for both substitutes and ODS, and the revisions proposed today are important to implementing those statutory authorities.

Consistent with the interpretation of section 608(c)(2) as incorporating the *de minimis* exemption, EPA's regulations at § 82.154(a)(2) state that ''[d]e minimis releases associated with good faith attempts to recycle or recover . . . non-exempt substitutes are not subject to this prohibition,'' thus extending the statutory *de minimis* exemption from the venting prohibition to good faith efforts to recycle or recover non-exempt substitute refrigerants. However, in contrast to the regulations for ODS refrigerants, the regulations do not provide any specific provisions to explain how to determine what constitutes such a ''good faith attempt'' with respect to substitute refrigerants. Thus, the regulations are currently unclear as to what requirements or practices regulated parties must follow to qualify for the *de minimis* exemption, and thereby comply with the venting prohibition, for non-exempt substitute refrigerants.

On June 11, 1998, EPA proposed to extend the *de minimis* exemption in section 608(c)(1) to substitute refrigerants and to issue regulations under section 608(c)(2) that implement and clarify the venting prohibition for substitutes (63 FR 32044). As stated in that proposed rule, ''while section 608(c) is self-effectuating, EPA regulations are necessary to define '*(d)e minimis* releases associated with good faith attempts to recapture and recycle or safely dispose' of such substances and to effectively implement and enforce the venting prohibition.''

In the final rule issued March 12, 2004 (69 FR 11946), EPA extended the 608(c)(1) *de minimis* exemption only to blends containing an ODS component. As stated in that rule at 69 FR 11949:

> [V]enting of all substitute refrigerants, including HFC and PFC refrigerants (and blends thereof) is prohibited under section 608(c), with the exception of *de minimis* releases associated with good faith attempts to recapture and recycle. The *de minimis* releases exception, however, is not self-effectuating, nor is it self-explanatory.
>
> EPA believes that regulatory clarification is necessary to define such '*[d]e minimis* releases' and 'good faith attempts to recapture and recycle or safely dispose of any such substance' and safely dispose of appliances to effectively implement and enforce the venting prohibition. Section 608(c)(1) in conjunction with 608(c)(2) of the Act allow for an exemption for *de minimis* releases associated with good faith attempts to recapture and recycle or safely dispose of substitutes for class I and class II ODSs used as refrigerants. A regulation reflecting the statutory requirement for recovery of substitute refrigerants is an essential part of a regulatory framework within which *de minimis* releases and good faith attempts to recapture and recycle or safely dispose of substitute refrigerants can be defined.

This interpretation that the statutory *de minimis* exemption applies to substitutes is consistent with the interpretation of section 608(c)(1) and (2) that EPA articulates in this section. The March 2004 Rule then goes on to state at 69 FR 11953 that:

> EPA is not, however, finalizing the proposal to extend all of the regulations concerning emissions reduction of CFC and HCFC refrigerants, found at 40 CFR part 82, subpart F, to HFC and PFC refrigerants. Therefore, today's rule does not mandate any of the following proposed requirements for HFC or PFC refrigerants that do not consist of a class I or class II ODS (*i.e.,* pure HFC or PFC refrigerants): A sales restriction on HFC or PFC refrigerants; specific evacuation levels for servicing HFC or PFC appliances; certification of HFC or PFC recycling and recovery equipment; certification of technicians who work with HFC or PFC appliances; reclamation requirements for used HFC and PFC refrigerants; certification of refrigerant reclaimers who reclaim only HFCs or PFCs; or leak repair requirements for HFC and PFC appliances.

Following the March 12, 2004, rulemaking, the Administrator promulgated a direct final rule to amend the regulatory definitions of *refrigerant* and *technician,* as well as the venting prohibition, to correct and clarify the intent of those regulations (70 FR 19273, April 13, 2005). As part of that change, EPA edited the regulatory venting prohibition to reflect the statutory *de* *minimis* exception in section 608(c)(2). As explained at 70 FR 19275:

In accordance with section 608(c)(2) of Title VI of the Clean Air Act (as amended in 1990), *de minimis* releases associated with good faith attempts to recapture and recycle or safely dispose of such substitutes shall not be subject to the prohibition. EPA has not promulgated regulations mandating certification of refrigerant recycling/recovery equipment intended for use with substitutes; therefore, EPA is not including a regulatory provision for the mandatory use of certified recovery/recycling equipment as an option for determining *de minimis* releases of substitutes. However, the lack of a regulatory provision should not be interpreted as an exemption to the venting prohibition for non-exempted substitutes. The regulatory prohibition at § 82.154(a) reflects the statutory reference to *de minimis* releases of substitutes as they pertain to good faith attempts to recapture and recycle or safely dispose of such substitutes.

In order to emphasize that the knowing venting of HFC and PFC substitutes remains illegal during the maintenance, service, repair, and disposal of appliances and to make certain that the *de minimis* exemption for refrigerants remains in the regulatory prohibition, § 82.154(a) is amended to reflect the venting prohibition of section 608(c)(2) of the Act.

In that action, EPA added the phrase ''De minimis releases associated with good faith attempts to recycle or recover refrigerants *or non-exempt substitutes* are not subject to this prohibition'' to § 82.154(a)(2) (emphasis added). However, because EPA has not extended the section 608 recycling and recovery requirements to substitute refrigerants, it is unclear how this exception applies to non-exempt substitute refrigerants that do not contain an ODS. As EPA has stated previously, the Agency is aware that some amount of refrigerant is released during the servicing of appliances even if precautions to avoid such releases are taken. For ODS refrigerants, the regulations on recovery and recyling provide certainty to the regulated community that if specific practices that EPA has identified are followed, regulated entities will not be held liable for releases of small amounts of refrigerant incidental to these actions. These regulations support the recovery or recycling of refrigerants and reduce the emissions of such substances. To provide the same clarity and certainty to the regulated community for substitute refrigerants, it is important to clarify how this exemption applies to non-exempt substitute refrigerants that do not contain an ODS. To do so, EPA is proposing to extend the amended regulations concerning emissions reduction and recapture and recycling of CFC and HCFC refrigerants, found at 40 CFR part 82, subpart F, to all substitute refrigerants that have not been exempted from the venting prohibition under § 82.154(a)(1).

Regulations intended to minimize the release and maximize the recapture and recovery of non-exempt substitutes will reduce the release and increase the recovery of ozone-depleting substances. For that reason, this proposal is additionally supported by the authority in section 608(a). Improper handling of substitute refrigerants is likely to contaminate appliances and recovery cylinders with mixtures of ODS and non-ODS substitutes. In particular, technician certification and a sales restriction help to ensure that persons lacking the expertise tested through certification do not release or contaminate ODS refrigerants in the course of using non-exempt substitutes to recharge or perform other work on systems that contain ODS. Contaminated appliances can lead to failures and emissions from those systems. Contaminated cylinders are less valuable to reclaimers and may not even be accepted by reclaimers as the mixed gas may no longer be cost-effectively recycled. Often, contaminated cylinders simply have to be destroyed. The costs of handling or properly disposing of these mixed refrigerants incentivizes intentional releases to the atmosphere. Therefore contamination can lead to the release of class I and class II substances. In addition, applying one consistent set of requirements to all relevant refrigerants will promote compliance with and enforcement of those requirements for both ODS refrigerants and their substitutes by reducing complexity.

EPA further notes that under the current definition of *refrigerant* any substance that consists in whole or in part of a class I or class II ODS and is used for heat transfer and provides a cooling effect, is a refrigerant and is subject to the requirements for ODS. However, when a regulated entity believes it is using a substitute refrigerant, and that substitute becomes contaminated with ODS, the contamination may not be apparent to the user, and thus, the user may not be aware that the requirements for refrigerants apply to that substance.

In sum, the authority to promulgate regulations regarding the use of class I and II substances encompasses the proper handling of alternatives where this is needed to reduce emissions and maximize recovery of class I and II substances. Applying one consistent set of requirements to all non-exempt refrigerants will promote compliance with and enforcement of those requirements for both ozone-depleting refrigerants and their substitutes by reducing complexity and clarifying requirements.

Authority for Amendments to Provisions Related to ODS

In addition to extending the existing regulations in subpart F to substitute refrigerants, EPA is also proposing the following amendments related to ozone-depleting substances: Lowered leak rates, required leak inspections, two-year leak limits, and recordkeeping requirements for the disposal of appliances containing between five and 50 pounds of refrigerant. EPA is also proposing to update and revise many provisions in subpart F to improve clarity and enforceability. EPA's authority for these amendments is based primarily on section 608(a), which requires EPA to promulgate regulations regarding the use and disposal of class I and II substances to ''reduce the use and emission of such substances to the lowest achievable level'' and ''maximize the recapture and recycling of such substances.'' In addition, because EPA is further elaborating the requirements and practices that regulated parties must follow to qualify for the *de minimis* exemption from the venting prohibition, EPA is drawing on its authority under section 608(c). EPA's authority for these actions is also supplemented by section 301(a) and 114, as described above.

EPA solicits comments on all aspects of the discussion in this section concerning its authority for the revisions proposed today, including comments on its authority to extend the amended regulations concerning emissions reduction and recapture and recycling of CFC and HCFC refrigerants, found at 40 CFR part 82, subpart F, to all non-exempt substitute refrigerants.

How CAA Sections 608 and 609 Work Together

While Section 608 covers all appliances, Section 609 of the CAA directs EPA to establish requirements to prevent the release of refrigerants during the servicing of MVACs specifically. MVACs are defined as mechanical vapor compression refrigeration equipment used to cool the driver's or passenger's compartment of any motor vehicle. EPA also regulates MVAC-like appliances under this section, which are used to cool the driver's or passenger's compartment of off-road vehicles, including agricultural and construction vehicles.

Under section 609, no person repairing or servicing motor vehicles for consideration may perform any service on an MVAC that involves the refrigerant without properly using approved refrigerant recovery or recovery and recycling equipment and no such person may perform such service unless such person has been properly trained and certified. Refrigerant handling equipment must be certified by EPA or an independent organization approved by EPA. Section 609 also prohibits the sale or distribution of any class I or class II MVAC refrigerant in a container of less than 20 pounds to any person that is not certified under section 609.

Regulations issued under section 609 are in 40 CFR part 82, subpart B. Subpart B includes information on prohibitions and required practices (§ 82.34), approved refrigerant handling equipment (§ 82.36), approved independent standards testing organizations (§ 82.38), and certification, recordkeeping, and public notification requirements (§ 82.42). Appendices A–F of subpart B provide standards for minimum operating requirements for MVAC servicing equipment.

The section 608 regulations found in 40 CFR part 82, subpart F are applicable to MVAC and MVAC-like appliances because MVAC and MVAC-like appliances are included in the statutory definition of appliances in section 601(1). Because servicing and technician training and certification are regulated under section 609, EPA's section 608 regulations defer to those requirements. Procedures involving MVACs that are not regulated under section 609, such as the disposal of MVACs and the purchase of refrigerant for use in MVAC, are covered by section 608. The prohibition against venting ODS and substitute refrigerants in section 608 is also applicable to refrigerants used in MVAC and MVAC-like appliances.

Through this rulemaking EPA is proposing to extend the provisions of section 608 to alternatives to ODS, including those used in MVACs. EPA is not updating the regulations under section 609 as part of this rulemaking because the 609 regulations have been applicable to all substitute substances since 1995.[7]

[7] The Agency has indicated plans to issue a separate proposed rule to consider adopting standards from the Society of Automotive Engineers (SAE) for servicing equipment in 40 CFR subpart B. These standards are: SAE J2843 R–1234yf Recovery/Recycling/Recharging Equipment for Flammable Refrigerants for Mobile Air-Conditioning Systems, SAE J2851 Recovery Equipment for Contaminated Refrigerant from Mobile Automotive Air Conditioning Systems, and SAE J3030 Automotive Refrigerant Recovery/Recycling Equipment Intended for Use with Multiple Refrigerants. In a separate future proposed rule, EPA intends to propose to incorporate by reference these standards developed by SAE International's Interior Climate Control Committee.

IV. The Proposed Rule

A. Proposed Changes to the Definitions in Section 82.152

EPA is proposing to update and clarify many of the definitions in subpart F. EPA is also proposing to add new definitions and remove definitions that have the sole purpose of restating the required practice. In general, these changes are to improve readability, increase consistency with how the term is used in the regulatory text, and specifically incorporate substitute refrigerants as appropriate.

Proposed changes to each term are discussed individually below, except for the terms *refrigerant* and *appliance* as well as *full charge* and *seasonal variance* which are sufficiently interrelated to require joint discussions.

EPA requests comments on all of the proposed changes to the definitions below. The Agency is particularly interested in comments on newly defined terms and on changes to definitions that affect the scope and requirements of subpart F.

Refrigerant and Appliance

The existing definitions in subpart F are written to separate ozone-depleting substances from non-ozone-depleting substitutes. As relevant here, section 601 of the CAA defines an *appliance* as a ''device which contains and uses a class I or class II substance as a refrigerant.'' Class I and class II substances are defined as substances listed under sections 602(a) or (b), respectively. Section 601 of the CAA does not define *refrigerant*. EPA's existing regulations at § 82.152 reach that definition through a two-step process. First EPA defined an *appliance* as a device which contains and uses a *refrigerant*. Then EPA defined the term *refrigerant* as solely class I or class II ozone-depleting substances, or mixtures containing a class I or class II ODS.

Defining these terms in this manner was appropriate before section 608(c)(2) took effect on November 15, 1995. Under section 608(c)(2), the venting prohibition applies to substitutes for ODS refrigerants and, accordingly, it states that ''[f]or purposes of this paragraph'' the term *appliance* includes any ''device which contains and uses as a refrigerant a substitute substance.'' However, EPA has not updated the definition of appliance in subpart F to reflect section 608(c)(2). Because EPA regulations still define an *appliance* as a device that contains and uses a refrigerant, and *refrigerant* in such a way that does not include substitutes, substitutes are thereby excluded from the regulatory definition of the term *appliance*. This leads to confusing results throughout subpart F. As only one example among many that could be provided, the purpose and scope section in § 82.150(b) states that this subpart applies to any person servicing, maintaining, or repairing appliances. Under the regulatory definition substitutes are not used in appliances, but regulations later in this subpart, at § 82.154(a)(1), state that no person maintaining appliances may knowingly vent any substitute from such appliances unless one of the regulatorily defined exceptions applies. This proposed rule attempts to clear up these inconsistencies by defining and using regulatory terms more consistently.

EPA is proposing to revise the definition of appliance so that it encompasses the usage of the term in sections 601 and 608 of the CAA. This rule proposes to define appliance as any device which contains and uses a class I or class II substance *or substitute* (emphasis added) as a refrigerant and which is used for household or commercial purposes, including any air conditioner, motor vehicle air conditioner, refrigerator, chiller, or freezer. This proposed change would make the regulatory definition consistent with sections 601 and 608 of the CAA, improve internal consistency of the regulations, and increase clarity for the regulated community.

EPA is proposing to amend the definition of refrigerant to include any substance, including blends and mixtures, consisting in part or whole of a class I or class II ozone-depleting substance *or substitute* (emphasis added) that is used for heat transfer purposes and provides a cooling effect. This proposed definition would note that the term refrigerant would include blends as well as mixtures of refrigerants.

EPA is proposing this approach so as to define refrigerant according to the way the term is currently understood. From an engineering standpoint, it does not matter whether or not a compound is an ODS to function as a refrigerant. This amended definition is closer to how the term is commonly understood. Broadening the term also brings other terms in subpart F such as *refrigerant circuit* or *reclaimed refrigerant* more in line with common usage.

Apprentice

EPA is proposing to amend the definition of the term *apprentice* to replace the ''Bureau of Apprenticeship and Training'' with the ''Office of

Apprenticeship'' to match the current name of the office. EPA is also proposing minor edits to improve clarity and readability.

Approved Equipment Testing Organization

EPA is proposing to remove the defined term *approved equipment testing organization*. The current definition is merely a reference to the section of the CFR that discusses the characteristics of such an organization. EPA is proposing to remove the definition to increase readability.

Certified Refrigerant Recovery or Recycling Equipment

EPA is proposing to remove the defined term *certified refrigerant recovery or recycling equipment*. The current definition merely refers to the sections of the CFR that discuss the certification program. This term is also used inconsistently throughout subpart F as ''recovery and recycling equipment,'' ''recovery or recycling equipment,'' ''recycling and recovery equipment,'' and ''recycling or recovery equipment.'' The regulations at § 82.36 make a distinction, in the context of MVAC servicing, between equipment that only recovers refrigerant and equipment that both recovers and recycles refrigerant. The regulations in subpart F generally do not make a distinction. The standards in appendices B1 and B2 refer to recovery and/or recycling equipment while the standard in appendix C for small appliances refers to recovery equipment only. For consistency, this rule proposes to use ''recovery and/or recycling equipment'' throughout, except for when referring only to small appliances.

Class I and Class II

EPA is proposing to create regulatory definitions for the terms *class I* and *class II* ozone-depleting substances. These terms are currently defined in section 601 of the CAA and in 40 CFR part 82, subpart A. EPA is not proposing a different meaning. Adding definitions to subpart F can assist the reader as these terms are currently not explained in the definitions section and are used frequently in the regulations. EPA's proposed definition of class I is an ozone-depleting substance that is listed in 40 CFR part 82, subpart A, appendix A. Similarly, EPA's proposed definition of class II is an ozone-depleting substance that is listed in 40 CFR part 82, subpart A, appendix B. EPA notes that the regulatory text uses class I substance, class I ODS, and class I refrigerant interchangeably (and similarly uses class II substance, class II ODS, and class II refrigerant interchangeably) and all are intended to have the same meaning for the purpose of subpart F.

Comfort Cooling

EPA is proposing to create a definition for the term *comfort cooling*. The leak repair provisions divide refrigeration and air-conditioning equipment into three categories: Comfort cooling, commercial refrigeration, and industrial process refrigeration. EPA has previously defined commercial refrigeration and industrial process refrigeration but not comfort cooling.

For purposes of the leak repair requirements, EPA is proposing to define comfort cooling as the air-conditioning appliances used to provide cooling in order to control heat and/or humidity in facilities including but not limited to office buildings and light commercial buildings. Comfort cooling appliances include building chillers and roof-top self-contained units. They may be used for the comfort of occupants or for climate control to protect equipment within a facility, such as but not limited to computer rooms.

EPA seeks comments on the applicability of the proposed definition of comfort cooling to air-conditioning equipment that is typically used to provide cooling and or humidity control in such environments.

Commercial Refrigeration

EPA is proposing to amend the definition of *commercial refrigeration* for clarity by removing the sentence that this equipment typically contains a charge size over 75 pounds. While accurate, this sentence has caused some confusion as to whether or not the leak repair requirements are applicable to appliances with a full charge between 50 pounds, as stated in the leak repair required practices, and 75 pounds. The Agency feels that the phrase is not required since the threshold for the leak repair requirements is a refrigerant charge of 50 pounds or greater. EPA is proposing to define *commercial refrigeration* as the refrigeration appliances used in the retail food and cold storage warehouse sectors. Retail food includes the refrigeration equipment found in supermarkets, convenience stores, restaurants and other food service establishments. Cold storage includes the refrigeration equipment used to store meat, produce, dairy products, and other perishable goods.

Critical Component

EPA is proposing to remove the defined term *critical component* and add the term *component*. EPA proposed the same change in the proposed 2010 Leak Repair Rule. As discussed in that rule, EPA considers components as the parts of the appliance that make up the refrigerant circuit such as the compressor, heat exchangers (condenser and evaporator), and valves (*e.g.,* heat recovery, expansion, charging). Other components may include receivers, manifolds, filter driers, and refrigerant piping. The meaning of the definition can be preserved without classifying the component as critical.

Owners or operators of IPR may be granted additional time to make repairs if critical components cannot be delivered within the necessary time. Later in this action, EPA discusses its proposal to create a consistent set of extensions to the leak repair regulations for all types of appliances. The unavailability of a component is not a situation unique to owners or operators of IPR. Owners or operators of comfort cooling and commercial refrigeration appliances should be granted the same flexibility as owners and operators of IPR when requesting additional time to make repairs due to the unavailability of components. Having similar requirements for all affected appliances also provides for a more consistent set of regulations that should reduce the complexity of the current leak repair regulations. Therefore, EPA is proposing to amend the definition so that it is not limited to IPR, but also includes comfort cooling and commercial refrigeration appliances.

EPA also proposes to replace the current defined term *critical component* with the newly defined term *component,* which would mean an appliance part, such as, but not limited to, compressors, condensers, evaporators, receivers and all of its connections and subassemblies. The term *component* is intended to be broader so everything that would have been covered under the term *critical component* would be included.

Custom-Built

EPA is proposing to amend the definition of the term *custom-built* to remove a citation to a section of the regulation that has moved.

Disposal

EPA is proposing to amend the definition of the term *disposal* to clarify that the disposal process includes the destruction of an appliance that releases or would release refrigerant to the environment. This proposed change is intended to cover activities such as vandalism or the cutting of refrigerant lines, both to steal metal and to vent the refrigerant. EPA is also proposing to clarify that the disassembly of an appliance for recycling, as well as reuse, is part of the disposal process. EPA does not believe that these changes alter the current understanding of the term and is proposing them to increase clarity.

Follow-Up Verification Test

EPA is proposing to amend the definition of the term *follow-up verification test* to remove duplicative text covered in § 82.156 ''Required Practices.'' The proposed revisions describe what the test is and how it is conducted and not what the regulatory requirements of the test are, which this rule proposes to move to § 82.157(f). EPA is proposing to define *follow-up verification test* as those tests that involve checking the repairs to an appliance after a successful initial verification test and after the appliance has returned to normal operating characteristics and conditions to verify that the repairs were successful. Follow-up verification tests include, but are not limited to, the use of soap bubbles, electronic or ultrasonic leak detectors, pressure or vacuum tests, fluorescent dye and black light, infrared or near infrared tests, and handheld gas detection devices.

EPA is not proposing to specify one test that would satisfy the definition of follow-up verification. In addition, these methods are not meant to be all-inclusive, but are intended to provide examples of known methodologies of performing leak repair verification tests.

Full Charge and Seasonal Variance

EPA is proposing to amend the definition of the term *full charge* to account for seasonal variances and to make minor edits for readability. EPA noted in the proposed 2010 Leak Repair Rule that owners or operators of commercial refrigeration appliances and IPR have expressed concerns that the full charge may not be accurately determined due to seasonal variances that may alter the amount of refrigerant in an appliance. Seasonal variances in ambient temperature and pressure have the effect of forcing refrigerant to different appliance components (for example, from an appliance's receiver to the condenser).

EPA proposed in 2010 to allow owners or operators to estimate the effect that seasonal variances have on appliance components by making calculations based on component sizes, density of refrigerant, volume of piping, and other relevant considerations. EPA continues to believe that owners or operators should be able to take seasonal variances into account in determining the full charge. Unlike the 2010 proposal, EPA is proposing that seasonal variances be accounted for using the actual amount of refrigerant added to or evacuated from the appliance, rather than estimates.

EPA is proposing to define *full charge* as the amount of refrigerant required for normal operating characteristics and conditions of the appliance as determined by using one or a combination of the following four methods:

(1) Use of the equipment manufacturer's determination of the full charge;

(2) Use of appropriate calculations based on component sizes, density of refrigerant, volume of piping, and other relevant considerations;

(3) Use of actual measurements of the amount of refrigerant added to or evacuated from the appliance, including for seasonal variances; and/or

(4) Use of an established range based on the best available data regarding the normal operating characteristics and conditions for the appliance, where the midpoint of the range will serve as the full charge.

EPA is proposing to create a defined term *seasonal variance* to mean the addition of refrigerant to an appliance due to a change in ambient conditions caused by a change in season, followed by the subsequent removal of an equal amount of refrigerant due to a later corresponding change in season, where both the addition and removal of refrigerant occurs within one consecutive 12-month period. The proposal to account for seasonal variance when calculating appliance leak rates is discussed further in Section IV.F. of this preamble.

Unlike in the 2010 proposal, EPA is not proposing to require that an owner or operator choose solely one method rather than a combination of methods to determine full charge. There are instances where multiple methods may be necessary to accurately determine the full charge. In addition, EPA is not proposing that owners or operators commit to the same method for the life of the appliance. However, as discussed later in this notice, EPA is proposing to require a written record of the full charge, the method(s) used to determine the full charge, and any changes to that amount.

High-Pressure Appliance

EPA is proposing to amend the definition of the term *high-pressure appliance* to update the list of example refrigerants. The proposed changes to the terms *appliance* and *refrigerant* carry over into this term as well. Therefore, under the proposed revisions high-pressure appliances would include those that use ODS and non-ODS refrigerants. EPA is proposing to update the list of example refrigerants with the most common types currently used in these systems, including ODS and non-ODS refrigerants. Specifically, these are R–22, R–407A, R–407C, R–410A, and R–502.

Industrial Process Refrigeration

EPA is proposing to amend the definition of the term *industrial process refrigeration* to make minor clarifications for readability and to remove a citation to a section of the regulation that has moved. EPA is proposing to define *industrial process refrigeration* as complex customized appliances that are directly linked to the processes used in, for example, the chemical, pharmaceutical, petrochemical, and manufacturing industries. This sector also includes industrial ice machines, appliances used directly in the generation of electricity, and ice rinks. Where one appliance is used for both industrial process refrigeration and other applications, it will be considered industrial process refrigeration equipment if 50 percent or more of its operating capacity is used for industrial process refrigeration.

Industrial Process Shutdown

EPA is proposing to amend the definition of the term *industrial process shutdown* to remove a citation to a section of the regulation that has moved.

Initial Verification Test

EPA is proposing to amend the definition of the term *initial verification test* to remove duplicative text covered in the required practices section of the regulation. The proposed revisions describe in general terms what the test is, not what the requirements of the test are. The purpose of the test is to verify that an appliance has been repaired prior to adding refrigerant back into the system. The requirements for an initial verification test are described in Section IV.F.10 of this preamble. EPA is proposing to define *initial verification test* as those leak tests that are conducted as soon as practicable after the repair is finished to verify that a leak or leaks have been repaired before refrigerant is added back to the appliance.

Leak Inspection

EPA is proposing to create a new defined term *leak inspection*. EPA is proposing to require that owners or operators conduct annual or quarterly leak inspections for appliances normally containing 50 or more pounds of refrigerant. EPA is proposing to define leak inspection as the examination of appliances using a calibrated leak detection device, a bubble test, or visual inspection for oil residue in order to determine the presence and location of refrigerant leaks.

This definition appropriately covers the techniques currently used to detect the location of leaks. This term encompasses activities that can be performed by someone who is not a certified technician, unlike some of the activities listed in the definition of the term follow-up verification test. The proposed term for leak inspection does not include activities that would assist in determining whether a system is leaking generally, such as viewing receiver levels, pressure gauges, or adding refrigerant. However, EPA encourages persons conducting leak inspections to also review receiver levels if applicable.

Leak Rate

EPA is proposing to amend the definition of the term *leak rate* to change the calculation performed under what is called Method 2 under the existing rules. Currently, the first step of that method is to take the sum of the quantity of refrigerant added to the appliance over the previous 365-day period (or over the period that has passed since leaks in the appliance were last repaired, if that period is less than one year). Instead of the cut-off being since the last repair (if less than 365 days), EPA is proposing to amend Step 1 to cover the period of time since the last successful follow-up verification test (if less than 365 days have passed since the last refrigerant addition). This proposed change would improve the clarity of the requirements, because under the existing definition, it is unclear if the repair has to be successful in order to be considered in the leak rate calculation; these proposed revisions are intended to clarify that it must be. As discussed later in this preamble, EPA is proposing to allow repairs and initial and follow-up verification tests to occur in the same visit by a certified technician. This will likely result in the verification tests occurring on the same day as the repair.

EPA is also proposing to rename the two methods from Method 1 and Method 2 to ''Annualizing Method'' and ''Rolling Average Method'' to improve readability. Finally, EPA is proposing to clarify that while the same leak rate calculation must be used for all appliances at the same facility, this only refers to the appliances subject to the leak repair provisions (*i.e.* appliances normally containing 50 or more pounds of refrigerant).

Low-Pressure Appliance

EPA is proposing to amend the definition of the term *low-pressure appliance* to update the list of example refrigerants. The proposed changes to the terms *appliance* and *refrigerant* carry over into this term as well. Therefore, under the proposed revisions low-pressure appliances would include those that use ODS and non-ODS refrigerants. EPA is proposing to update the list of example refrigerants with the most common types currently used in these systems, including ODS and non-ODS refrigerants. Specifically, these are R–11, R–123, R–113, R–245fa, and R–1233zd(E).

Medium-Pressure Appliance

EPA is proposing to amend the definition of the term *medium-pressure appliance* to update the list of example refrigerants. The proposed changes to the terms *appliance* and *refrigerant* carry over into this term as well. Therefore, under the proposed revisions medium-pressure appliances would include those that use ODS and non-ODS refrigerants. EPA is proposing to update the list of example refrigerants with the most common types currently used in these systems, including ODS and non-ODS refrigerants. Specifically, these are R–114, R–124, R–12, R–134a, and R–500.

Mothball

EPA is proposing to change the defined term *system mothballing* to *mothball* to reflect how it is used in the regulations. Mothballing an appliance suspends the time needed to complete repairs, retrofit or retirement plans, or completion of a retrofit or retirement for IPR that have triggered the leak repair requirements. The current exemption for system mothballing at § 82.154(i)(10) is available only for IPR. EPA is proposing to extend that exemption to all appliances, therefore EPA is proposing to remove the reference to ''refrigeration'' appliances in the definition. The current definition also requires that the appliance be shut down for ''an extended period of time.'' EPA does not believe that the length of time that the system is shut down is controlling, but rather that the system has been removed from service temporarily, as opposed to permanently retired, and that the refrigerant has been evacuated. EPA is also proposing to clarify that the suspension of time ends when refrigerant is added back into the appliance. The revised definition also notes that refrigerant can be evacuated from an isolated component of the appliance and makes minor edits to improve clarity and readability. Therefore, EPA is proposing the term *mothball* to mean to evacuate refrigerant from an appliance, or the affected isolated section or component of an appliance, to at least atmospheric pressure, and to temporarily shut down that appliance.

Normal Operating Characteristics and Conditions

EPA is proposing to change the defined term *normal operating characteristics or conditions* by replacing ''or'' with ''and'' for consistency through the regulations and to accurately describe the intended state of the appliance to which this term refers. EPA is also proposing to remove a reference to a section of the regulation that has moved. EPA is further proposing to add a reference to the appliance's full charge. Operating at full charge is a necessary element of an appliance's normal characteristics and it should be reflected in the definition. Finally, EPA is clarifying that this term extends to all appliances, not just refrigeration appliances. This term is currently used in the regulatory text in reference to all types of air-conditioning and refrigeration systems.

Normally Containing a Quantity of Refrigerant

EPA is proposing to remove the defined term *Normally containing a quantity of refrigerant*. This term merely indicates the quantity of refrigerant in an appliance at full charge and it may be confusing to have two defined terms to make the same point. EPA is proposing to replace this term wherever it is found with the phrase ''with a full charge of.''

One-Time Expansion Device

EPA is proposing to amend the definition of the term *one-time expansion device* to make clear that this includes devices that can store multiple charges, which are released individually to the environment to provide a cooling effect. EPA is proposing to define *one-time expansion device* as an appliance that relies on the release of its refrigerant charge to the environment in order to provide a cooling effect. These are typically single releases but could also include products that are designed to release refrigerant to the environment through multiple individual charges.

Opening an Appliance

EPA is proposing to amend the definition of the term *opening an appliance* to improve readability.

Reclaim

EPA is proposing to change the defined term *reclaim refrigerant* to *reclaim* so as to match usage in the regulatory text. EPA is also proposing to update the Air Conditioning, Refrigeration, and Heating Institute (AHRI) standard referenced in the definition. This updated standard includes non-ODS refrigerants.

Recover

EPA is proposing to change the defined term *recover refrigerant* to *recover* so as to match usage in the regulatory text.

Recycle

In the context of recycling refrigerant, EPA is proposing to change the defined term *recycle refrigerant* to *recycle* so as to match usage in the regulatory text. EPA is also proposing to clarify in the definition that reuse of recycled refrigerant must occur in equipment of the same owner or operator. EPA has previously prohibited in § 82.154(g) the sale of used refrigerant unless it has been reclaimed or is being transferred to an appliance owned by the same parent company or by the same Federal agency or department. EPA is also making minor changes to improve readability.

Retire

EPA is proposing to create a defined term *retire* in reference to appliances to mean the disassembly of the entire appliance including its major components, such that the appliance as a whole cannot be used by any person in the future. Retirement means that any remaining refrigerant would be recovered from the appliance followed by the dismantling and disposal of the appliance components. Retirement differs from mothballing as defined at § 82.152 because a mothballed appliance is simply evacuated and shut down until it is ready to be used once again, whereas retirement involves a permanent shutdown and disassembly of an appliance. Retirement should also not be confused with a repair. *Repair* is not expressly defined in the subpart F regulations. It may include the removal of a faulty component, but such removal does not mean that the appliance as a whole has been removed from service and rendered unfit for use by the current or any future owner or operator. Throughout this rule, ''replacement'' or ''replace'' may be used when discussing a situation where an existing appliance is retired, and replaced with another appliance. In some instances, however, the owner or operator may choose to only retire and not replace an appliance so the two terms are not always used together.

Retrofit

EPA is proposing to create a defined term *retrofit.* As discussed in the proposed 2010 Leak Repair Rule, many appliance owners or operators have incorrectly equated the two terms *retrofit* and *repair*. EPA does not view a retrofit or the need to retrofit as a repair. Although *repair* is not expressly defined in the subpart F regulations, EPA considers a repair to include an action that addresses the leaking appliance or the affected component(s) of the leaking appliance. Repairs may include replacement of components or component subassemblies, whereas EPA uses the term *retrofit* to refer to a change to the appliance in order to convert it to the use of a different refrigerant. EPA does not use the term to apply to upgrades or repairs to existing equipment where the refrigerant is not changed. Retrofits often require changes to the appliance (for example, change in lubricants, filter driers, gaskets, o-rings, and in some cases, components) in order to acquire system compatibility.

Self-Sealing Valve

EPA is proposing to create a defined term *self-sealing valve.* A self-sealing valve means a valve affixed to a container of refrigerant that automatically seals when not actively dispensing refrigerant and that meets or exceeds established performance criteria as identified in § 82.154(f)(2). The purpose of a self-sealing valve is to prevent or minimize inadvertent release of refrigerant to the environment during the use and storage of the container of refrigerant. EPA discusses the requirement for self-sealing valves for small cans of MVAC refrigerant in more detail in Section IV.H.4 of this preamble.

Small Appliance

EPA is proposing to amend the definition of the term *small appliance* to remove the reference to class I and class II refrigerants. The proposed changes to the terms *appliance* and *refrigerant* carry over into this term as well. Therefore, under this proposal small appliances would include those that use ODS and non-ODS refrigerants. EPA is also proposing to add portable air conditioners to the list of example appliances.

Substitute

EPA is proposing to amend the definition of the term *substitute* to remove the phrases ''EPA-approved'' and ''in a given refrigeration or air-conditioning end-use.'' These phrases are references to the SNAP program, which identifies acceptable alternatives to ODS for specific end-uses. EPA is proposing to remove this reference because the Agency has recently changed the status of certain refrigerants from acceptable to unacceptable for new retail food refrigeration equipment, vending machines, and motor vehicle air conditioning (80 FR 42870; July 20, 2015). EPA does not mean to imply that finding a refrigerant to be unacceptable in a given end-use under SNAP means that it is no longer included within the term substitute and thus by extension the term refrigerant. Were that the case, those substitutes could be inadvertently exempted from the safe handling requirements of subpart F. EPA is making this change to prevent that confusion, especially since the Agency is allowing for the servicing of existing appliances designed to use refrigerants that the Agency recently listed as unacceptable in new (and in some cases) retrofitted appliances. In the revised definition, any chemical or product, whether existing or new, that is used by any person as a replacement for a class I or II ozone-depleting substance would be considered a substitute, even if it has been recently listed as unacceptable under SNAP in some end-uses. As discussed above, EPA is also proposing to incorporate the term *substitute* within the term *refrigerant.*

By defining the term *substitute* in this way, and incorporating it into the definition of refrigerant, EPA intends to apply the requirements in subpart F to all substances that are functionally refrigerants, including but not limited to HFCs, PFCs, HFOs, hydrofluoroethers, and hydrocarbons. Multiple stakeholders at the November 2014 meeting encouraged EPA to treat all refrigerants in the same manner. With the exception of those substances specifically exempted from the venting prohibition, requiring all substances used as refrigerants to be handled in the same manner will reduce confusion and ultimately prevent emissions of both ODS refrigerants and non-ODS, high-GWP refrigerants. As discussed later in this notice, EPA will continue to exempt through regulation certain substitutes from the venting prohibition, and the other safe handling provisions in subpart F, based on a determination that their release does not pose a threat to the environment. This is the case in the current regulations, for instance, with all approved uses of hydrocarbon refrigerants, ammonia, and CO_2.

Suitable Replacement Refrigerant

EPA is proposing to remove the defined term *suitable replacement refrigerant*. The existing leak repair regulations allow for additional time to retrofit or retire an appliance using an ODS refrigerant if a suitable replacement refrigerant with a lower ozone depletion potential is unavailable. This is the only place this term is used in subpart F. EPA is proposing to remove the extension due to the unavailability of a suitable replacement, as discussed in Section IV.F.13 of this notice. It is therefore appropriate to remove the term from the list of definitions.

System Receiver

EPA is proposing to create a defined term *system receiver* to provide clarity to the reader. This definition is currently found in a parenthetical in the regulatory text at § 82.156(a). This term is used when describing the required practices to properly evacuate refrigerant from an appliance and the definition does not introduce any new concepts to the evacuation requirements currently stated in the parenthetical. EPA is proposing to define system receiver to mean the isolated portion of the appliance, or a specific vessel within the appliance, that is used to hold the refrigerant charge during the servicing or repair of that appliance.

Technician

EPA is proposing to amend the definition of the term *technician* to improve clarity. The revised definition highlights that the determining factor for being a technician is the performance of actions that could reasonably be expected to violate the integrity of the refrigerant circuit. In general, only technicians should be performing actions that could violate the integrity of the refrigerant circuit and could therefore release refrigerant into the environment. The exception to that general statement, which the revised definition makes clear, is that persons maintaining, servicing, or repairing MVACs and persons disposing of small appliances, MVACs, or MVAC-like appliances do not need to be technicians. This proposed change does not affect the scope of the existing requirements but rather is intended to address feedback from stakeholders that the Agency should clarify which activities must be conducted by technicians and which need not be.

The current definition of technician also includes a non-exclusive list of example activities that are reasonably expected to violate the integrity of the refrigerant circuit as well as examples of activities that do not. EPA considered proposing to create a separate definition for that term but found it unnecessary to do so as it only appears within the definition of technician. EPA is proposing to make changes to these examples for clarity and to add the following two examples of activities reasonably expected to violate the integrity of the refrigerant circuit: Adding or removing components and cutting the refrigerant line. EPA is proposing to add these to the list of examples to improve the enforceability of these regulations.

Very High-Pressure Appliance

EPA is proposing to amend the definition of the term *very high-pressure appliance* to update the list of example refrigerants. The proposed changes to the terms *appliance* and *refrigerant* carry over into this term as well. Therefore, under the proposed revisions very high-pressure appliances would include those that use ODS and non-ODS refrigerants. EPA is proposing to update the list of example refrigerants with the most common types currently used in these systems, including ODS and non-ODS refrigerants. Specifically, these are R–13, R–23, R–503, R–508A, and R–508B.

Voluntary Certification Program

EPA is proposing to remove the defined term *voluntary certification program*. This term references a provision in the regulations that grandfathered in technicians who were certified prior to the establishment of the technician certification program in subpart F. EPA is proposing to remove these grandfathering provisions and therefore is proposing to remove the definition as well. The rationale for proposing to remove this grandfathering provision is discussed with the technician certification proposals below.

B. Proposed Changes to the Venting Prohibition in Section 82.154

1. Background

As explained in section III of this notice, § 82.154(a) currently prohibits the venting of ODS refrigerants and non-ODS substitutes to the environment. This regulatory provision also currently provides an exemption to the venting prohibition for certain substitutes in specific end-uses based on a determination that the listed substitutes in the listed end-uses do not pose a risk to the environment when released. This section also exempts from the venting prohibition *de minimis* releases of ODS refrigerants and non-exempt substitute refrigerants, and defines *de minimis* releases of ODS refrigerants to be those releases that occur when the other provisions of subpart F (or subpart B in the case of MVACs) are followed.

2. Applying the de Minimis Exemption to Substitute Refrigerants

The knowing venting, release, or disposal of substitutes for class I and class II refrigerants during maintenance, service, repair, or disposal of an appliance or IPR is expressly prohibited by section 608(c)(1) and (2) of the CAA, effective November 15, 1995, unless the Administrator determines that such venting, release, or disposal does not pose a threat to the environment. This prohibition is commonly called the venting prohibition. As explained in more detail above, section 608(c)(1) establishes the venting prohibition for class I and class II substances, and also establishes an exemption from the prohibition for *de minimis* releases associated with good faith attempts to recapture and recycle or safely dispose of ''any such substance.'' The statutory language of section 608(c)(2) extends paragraph 608(c)(1) to substitutes for class I and class II substances used as refrigerants in appliances and IPR. This extension includes the prohibition on venting and the exemption for *de minimis* releases associated with good faith attempts to recapture and recycle or safely dispose of such substances.

For class I and II substances EPA has interpreted those releases that occur despite compliance with EPA's required practices for recycling and recovery under § 82.156, including use of recovery and/or recycling equipment certified under § 82.158, and technician certification programs under § 82.161 as *de minimis*. Thus, compliance with these regulations represents ''good faith attempts to recapture and recycle or safely dispose'' of refrigerant. Accordingly, the regulations at § 82.154(a)(2) currently provide that releases of ODS refrigerants are considered *de minimis* only if they occur when the other provisions of subpart F (or subpart B in the case of MVACs) are followed. As noted above, although the regulations at § 82.154(a) exempt *de minimis* releases of non-exempt substitutes from the venting prohibition, the regulations do not provide any express guidance for such substitutes as to what practices are considered ''good faith attempts to recapture and recycle or safely dispose'' of the substitute such that incidental releases would qualify for the *de minimis* exception.

EPA proposes to interpret the phrase ''good faith attempts to recapture and recycle or safely dispose'' similarly when it applies to substitute refrigerants under section 608(c)(2) as when it applies to ODS refrigerants under section 608(c)(1). Thus, compliance with the proposed provisions and revisions regarding evacuation of equipment, use of certified equipment, and technician certification in any instance where a person is opening (or otherwise violating the refrigerant circuit) or disposing of an appliance, as defined in § 82.152 would represent ''good faith attempts to recapture and recycle or safely dispose'' of substitute refrigerants. EPA considers these provisions to appropriately represent good faith attempts to recapture and recycle or safely dispose of substitute refrigerants for the reasons discussed in EPA's justification of each proposed provision below. Under this approach, emissions that take place during servicing or disposal when these provisions are not followed would not be *de minimis* emissions and would be subject to the venting prohibition. Conversely, this approach together with the proposal to include substitute refrigerants in the definition of the term refrigerant, would mean that substitute refrigerants would be included in the regulatory clarification that releases are only considered *de minimis* if they occur when these procedures or those under subpart B are followed.

It is impossible to open appliances (or otherwise violate the refrigerant circuit) or dispose of appliances without emitting some of the refrigerant in that circuit, even if an effort is made to recapture. Even after the appliance has been evacuated, some refrigerant remains, which is released to the environment when the appliance is opened or disposed of. Other activities that fall short of opening or disposing of the appliance but that involve violation of the refrigerant circuit also release refrigerant, albeit in very small quantities, because connectors (*e.g.,* between hoses or gauges and the appliance) never join together without intervening space. Even in the best case in which a good seal is made between a hose and an appliance before the valve between them is opened, some refrigerant will remain in the space between the valve and the outer seal after the valve is closed. This refrigerant will be released when the outer seal is broken. Thus, whenever a person opens an appliance (or otherwise violates the refrigerant circuit) in the course of maintaining, servicing, repairing, or disposing that appliance, he or she could violate the venting prohibition unless the exception for *de minimis* releases applies. Because EPA is proposing to define the exception for substitute refrigerants such that it only applies when the person complies with the existing refrigerant management provisions, compliance with the proposed provisions will ensure that any releases incidental to these practices will be considered *de minimis* and thus will not violate the venting prohibition under section 608(c)(2). EPA invites comments on applying these provisions of subpart F to substitute refrigerants.

3. Exempting Certain Substitutes From the Venting Prohibition

EPA is proposing to explicitly state in the regulatory text that the substitutes exempted from the venting prohibition in § 82.154(a)(1) are also exempt from the other provisions of subpart F. EPA has previously determined that these substances do not pose a threat to the environment when vented or otherwise released. Given that decision, it would generally not make sense to require procedures for recovery or safe disposal, or to apply other provisions of subpart F to those exempt refrigerants. This is consistent with the intent of section 608(c)(2), which states that the Administrator may determine that not just the venting but also the ''releasing, or disposing'' of such substance does not pose a threat to the environment. EPA does not view this as a substantive change but rather as a clarification of the existing regulations. This proposed revision will also help to ensure that the extension of substantive requirements to substitutes does not inadvertently lead to application of those requirements to exempt substitutes.

EPA is also proposing to reorganize the list of exempt substitutes by refrigerant type for readability. All of the specific end-uses for that substance would appear in one place. EPA is not proposing any changes to those end-uses or adding or removing any substitutes from the list.

4. Releases From Containers

EPA is moving the existing regulatory provision in § 82.154(a)(2) that states that the venting prohibition applies to the release of refrigerant (both ODS and non-exempt substitute refrigerants) after its recovery from an appliance. EPA is moving this provision to a separate subparagraph (§ 82.154(a)(3)) rather than its current location in the description of a *de minimis* release. Standing alone should make the provision clearer that it is a violation of the venting prohibition to vent or otherwise release refrigerant after that refrigerant is recovered from an appliance, whether from cylinders, recovery equipment, or any other storage container or device. EPA wishes to highlight that the venting prohibition cannot be obviated through using a recovery device and subsequently releasing the refrigerant. This is especially important because refrigerant recovered from appliances may be contaminated or be a mixture of multiple refrigerants. Such refrigerant may be difficult to reclaim or may require a fee for proper disposal or destruction. In light of those difficulties, it is important to emphasize that venting this refrigerant, even though it is in a cylinder and not an appliance, is illegal.

5. Removing Effective Dates

EPA is proposing to remove the effective dates in § 82.154(a) and elsewhere in subpart F wherever it makes sense to do so. These other locations are § 82.154(d)–(f) and (i)–(k), § 82.156(f), § 82.158(a) and (n), § 82.161(a), and § 82.164(a). Many of the effective dates are 1993 or 1994 when the program was established and it is now well understood that these provisions currently apply. Others refer to the specific standards for recovery and/or recycling equipment, which EPA addresses below. EPA does not want to remove an effective date where it is important for understanding the timing of the regulations. For example, EPA is proposing to remove the separate effective date references in § 82.154(a) but may decide to leave the June 9, 2015, effective date for the alternatives added under a recent SNAP rule (April 10, 2015; 80 FR 19454) as it is relatively new. EPA specifically encourages comments on whether removing effective dates in most instances is appropriate, both in § 82.154(a) and in other provisions of subpart F.

C. Proposed Changes to the Refrigerant and Appliance Sales Restrictions in Section 82.154

1. Background

Under the current regulations at § 82.154(m), the sale or distribution of a refrigerant containing a class I or class II substance, such as R–12, or refrigerant blends that include HCFCs, is restricted to technicians certified under sections 608 or 609 of the CAA. The sale or distribution of any class I or class II substance suitable for use in an MVAC that is in a container of less than 20 pounds may only be sold to technicians certified under section 609. For example, any person who sells or distributes R–12 for use in an MVAC and that is in a container of less than 20 pounds must verify that the purchaser has obtained certification by an EPA-approved section 609 technician training and certification program.

The current regulations at § 82.154(g) also restrict the sale of used ODS refrigerant sold for reuse unless certain conditions are met, the most important of which is that the refrigerant has been reclaimed. Sections 82.154(j) and (k) prohibit the sale of appliances containing an ODS refrigerant unless the appliance has a servicing aperture or process stub to facilitate the removal of refrigerant at servicing and disposal. Section 82.154(p) also currently prohibits the manufacture or import of one-time expansion devices that contain any refrigerant (ODS or non-ODS), other than exempted refrigerants.

2. Extension to Substitute Refrigerants

EPA is proposing to extend the sales restriction to HFCs and other non-exempt substitute refrigerants. The sales restriction would apply to non-exempt substitute refrigerants sold in all sizes of containers for use in all types of appliances. However, as discussed below, EPA is proposing to create an exception for small cans (two pounds or less) of refrigerant intended to service MVACs, so long as the cans are equipped with a self-sealing valve. EPA is also proposing to extend the restriction on the sale of used refrigerant to include used non-exempt substitute refrigerants and require that appliances containing such substitute refrigerants contain a servicing aperture or process stub to allow for recovery of the refrigerant.

To extend the sales restriction, EPA is proposing to remove references to class I and class II substances where appropriate in these provisions and to replace them with the term *refrigerant,* which EPA is proposing to amend in § 82.152 to include substitutes. To avoid confusion, EPA is proposing to add a provision specifically noting that the sales restriction does not apply to substitutes that are exempt from the venting prohibition. EPA is also proposing to amend the purpose and scope statements at § 82.150, both of which describe the sales restriction as only affecting class I or class II ODS. EPA is proposing to add the term *substitutes* to these purpose and scope statements to clarify that the sales restriction, as well as the other provisions of the rule, would apply to ODS and substitute refrigerants.

EPA restricted the sale of ODS refrigerant to certified technicians as a means of ensuring that only qualified individuals—those who have sufficient knowledge of the safe handling regulations—actually handle refrigerant. EPA considers the restriction on the sale of ODS refrigerant to be important for ensuring compliance with and aiding enforcement of the regulations issued under section 608 and section 609 of the CAA. This requirement also fits in well with EPA's Next Generation Compliance strategy since compliance with this requirement is largely carried out by distributors who sell refrigerant to technicians. Limiting the sale of substitute refrigerants to technicians who have demonstrated knowledge of safe handling practices is important to minimizing the release of refrigerants during the maintenance, servicing and repair of appliances containing substitute refrigerants. A sales restriction for substitute refrigerants is also vital to extending the technician certification requirements to individuals working with substitute refrigerants. EPA more fully discusses later in the preamble how section 608(c) of the CAA provides authority for extending the technician certification program. As an element of that program, the same legal authority applies to the sales restriction.

EPA is not proposing to rely on section 608(b)(2) of the CAA which explicitly requires servicing apertures or other similar design features for appliances containing an ODS refrigerant. Instead, in order to comply with the section 608(c) prohibition against the venting, release, or disposal of substitute refrigerants into the environment, similar design features must also be present on appliances containing such substitutes. These access points allow for the proper evacuation or recovery of substitute refrigerant, preventing releases to the atmosphere. Without these access points, it would be harder for persons servicing or disposing of such appliances to properly evacuate the refrigerant in accordance with § 82.156(b). Additionally, since refrigerant in an appliance will eventually leak out in the disposal process, such as when an appliance is crushed or shredded, failing to remove refrigerant prior to disposal could lead to a knowing release of refrigerant. These equipment requirements would prevent subsequent knowing releases of refrigerant.

One-time expansion devices, by design, release their refrigerant charge to the environment in order to provide a cooling effect. Examples include self-chilled beverage containers that must be disposed of or recycled after each use, as well as reusable containers. The existing regulations limit the manufacture or import of one-time expansion devices to only those that contain exempted refrigerants. However, the definition of one-time expansion device refers to them as *appliances* containing a *refrigerant,* both of which under the existing regulations refer only to ODS refrigerants. This rule would clarify that ambiguity and clearly limit one-time expansion devices to those using exempt refrigerants.

In addition to fully implementing 608(c) by clarifying how regulated entities may avail themselves of the *de minimis* exemption to the venting prohibition, these proposed changes would apply the same requirements for sales of ODS and substitute refrigerants (except those that are exempt from the 608(c) prohibition on venting), as well as for appliances containing ODS and substitute refrigerants. This should reduce potential confusion for the person maintaining, servicing, repairing and disposing of appliances, resulting in fewer releases of ODS and substitute refrigerants. For this reason, identical treatment will help to reduce ODS emissions to the lowest achievable level and lead to more recovery and recycling or reclamation of ODS.

EPA also has authority under section 301(a) of the CAA to ''prescribe such regulations as are necessary to carry out [its] functions under this Act.'' As described above, section 301(a) provides additional authority for EPA to establish a sales restriction as a way to further implement the 608(a) and 608(c)(2) statutory requirements. EPA solicits comments on its authority for the proposed changes to these regulations.

3. Sales of Small Cans

EPA is generally proposing to extend the sales restriction to substitute refrigerants but is also proposing a limited exception for small cans of MVAC refrigerant (two pounds or less). Historically, individuals have been able to purchase small cans of non-ODS refrigerant to service their own vehicles. This do-it-yourself (DIY) servicing is unique among the air-conditioning and refrigeration sector to the MVAC end-use. If the sales restriction were simply extended to substitute refrigerants without change, the sale of both small containers of refrigerant, which are used exclusively for DIY servicing of MVAC systems, and large (*e.g.* 25- or 30-pound) cylinders of refrigerant used by technicians to service MVAC and other appliances would be limited to certified technicians. As discussed below, this could be unnecessarily burdensome. A less burdensome option that EPA is proposing is to exempt small cans of MVAC refrigerant from the sales restriction and require that manufacturers install self-sealing valves that minimize the release of refrigerant during servicing.

In the United States, HFC–134a has been used in all newly manufactured vehicles with air-conditioning systems since 1994 and almost all small cans of refrigerant sold for MVAC DIY use contain HFC–134a.[8] Recently, the SNAP program listed HFO–1234yf, HFC–152a, and carbon dioxide (CO_2 or R–744), three climate-friendly alternatives for MVAC, as acceptable subject to use conditions for use in new light-duty vehicles. Manufacturers are currently producing or are actively developing light-duty models using these three refrigerants. The proposed exception for small cans would apply to HFC–134a, HFO–1234yf, HFC–152a, as well as any additional MVAC refrigerants listed as acceptable subject to use conditions under SNAP that are not exempt from the venting prohibition. Because CO_2 is exempt from the venting prohibition, it will not be subject to sales restrictions or, in turn, this exception. Currently, EPA has not received a submission of a unique fitting for use on a small can of HFO–1234yf; therefore, currently this refrigerant cannot be sold in small cans to individuals at this time.

Most small cans are purchased by individuals servicing their own personal vehicles. Based on the NPD Automotive Aftermarket Industry Monitor, 2008, approximately 14 million small cans are sold each year. If EPA were to extend the sales restriction to small cans, individuals who normally service their own MVAC would be required to either seek certification under section 609 or take their car to a technician to be serviced. EPA estimates that the cost associated with those two actions could be as much as $1.5 billion per year. For more details, see *Analysis of the Economic Impact and Benefits of Proposed Revisions to the National Recycling and Emission Reduction Program* in the docket.

In lieu of a costly sales restriction on small cans used for MVAC servicing, EPA sought input on alternate mechanisms for reducing refrigerant releases from those cans. EPA reached out to the Auto Care Association and the Automotive Refrigeration Products Institute, two associations that represent the vast majority of manufacturers of small cans in the United States. The organizations referred EPA to California's program, and in particular suggested that EPA consider CARB's requirement that manufacturers install self-sealing valves on small cans. The organizations indicated that a nationwide requirement for self-sealing valves would be preferred to a sales restriction and would be a less costly way to reduce emissions. EPA then consulted with CARB to see if they had suggestions on ways to reduce refrigerant releases from small cans and to learn more about their experience with self-sealing valves. Based on California's experience, self-sealing valves are an effective way to reduce emissions of HFCs used to service MVACs without limiting sales to certified technicians. These valves reduce the release of refrigerant during servicing and may also reduce releases from the can after the servicing is complete.

According to industry representatives and CARB, self-sealing valves are estimated to cost $0.25 per can. Manufacturers are already producing small cans with self-sealing valves to meet California's requirements. EPA heard from the manufacturers of those cans that they would not find it to be unduly burdensome to extend that restriction to all cans produced for sale in the United States, especially as compared to an extension of the sales restriction that would prohibit the sale of small cans completely. Because they are incorporated into the product, consistent with EPA's Next Generation compliance principles, the individual servicing her or his personal MVAC would reduce emissions without any additional effort or training, as compared to using small cans of refrigerant on the market today that do not employ the self-sealing valve. Self-sealing valves would thus be an effective mechanism for controlling the release of refrigerant to the atmosphere.

EPA is proposing to create in appendix E a standard for self-sealing valves that is based largely on CARB's *Test Procedure for Leaks from Small Containers of Automotive Refrigerant,* TP–503, as amended January 5, 2010. To be consistent with the CARB standard and existing small cans that are already on the market, the leakage rate may not exceed 3.00 grams per year when the self-sealing valve is closed. This leakage rate applies to full containers as well as containers that have been used and are partially full.

As described in *Analysis of the Economic Impact and Benefits of Proposed Revisions to the National Recycling and Emission Reduction Program,* EPA estimates that a nationwide requirement to use self-sealing valves on all small cans will reduce emissions by more than 657,000 $MTCO_2eq.$ per year. EPA also anticipates there could be additional emissions reductions to the extent the self-sealing valves allow individuals to store and re-use the same can of refrigerant, reducing the need to buy additional small cans. Currently, a small can is typically used in one vehicle and then discarded with some refrigerant still remaining in the can. EPA estimates that the cost for this requirement would be approximately $3 million. EPA anticipates that the cost for self-sealing valves will decrease over time as manufacturers increase production and achieve greater economies of scale.

EPA's authority for this requirement is primarily in sections 608(c) and 301(a) of the CAA. EPA has the authority to require that anyone purchasing small cans of refrigerant be a certified technician, one element of the subpart F provisions needed to ensure that releases during the servicing of appliances are considered *de minimis* and thus exempt from the venting prohibition. However, EPA is proposing to require self-sealing valves as a lower cost option for minimizing the release of refrigerant during the servicing of MVACs. The requirement for self-sealing valves helps implement the venting prohibition under section 608(c) because it helps ensure that refrigerant is not released while servicing MVACs. The Agency is proposing to revise the regulations to clarify that any person servicing their personal MVAC with a small can that has a self-sealing valve installed may rely upon the *de minimis* exemption to the venting prohibition. As described previously, section 301(a) of the CAA provides supplemental authority for the Agency to ''prescribe such regulations as are necessary to carry out [its] functions under this Act.'' In this case, section 301(a) provides additional authority for EPA to require self-sealing valves on all small cans of substitute refrigerant sold after a date in the future to implement the 608(c)(2) venting prohibition.

Small cans of refrigerant sold for MVAC servicing are different from containers of refrigerant sold for stationary refrigeration and air-conditioning in that the small cans for MVAC are required to have unique fittings. The SNAP program requires as a use condition for MVAC refrigerants that the container and the MVAC system use unique fittings to prevent cross-contamination. If used properly, the unique fittings will not allow for the introduction of HFC–134a refrigerant

[8] ODS refrigerant for MVAC servicing that is sold in cylinders less than 20 pounds is currently restricted to technicians certified under section 609 of the CAA.

into a system using HFO–1234yf or another substitute refrigerant. Using an adapter or deliberately modifying a fitting to use a different refrigerant is a violation of the SNAP use conditions. EPA also believes that the unique fittings could reduce the likelihood that a small can will be used to service appliances other than MVACs that use substitute refrigerants, in contravention of the proposed sales restriction.

Refrigerant sold for MVAC servicing is also different because of the types of equipment that could be serviced with a small can. First, the appliances that typically use HFC–134a (the most-common refrigerant that would be sold in small can for MVAC recharging) in a home would include appliances, like a refrigerator, that are hermetically sealed. Someone who wanted to open that appliance would need greater skill and specialized equipment to service the appliance since there wouldn't be a servicing port to access. This should dissuade homeowners from using a small can to service other small appliances. Larger appliances that use HFC–134a, like a reach-in cooler, would need more than one small can to fully charge the appliance. Because of the cost of and the added effort to use multiple small cans to charge a larger appliance, it's not practical for someone to use a small can. This would likely lead the person to purchase a larger container of refrigerant, which would require that the person be a certified technician.

EPA requests comments on its proposal to exempt small cans of refrigerant for MVACs with self-sealing valves from the sales restriction, including the following: (1) Whether EPA should finalize the above-described exception for small cans if a self-sealing valve is affixed; (2) whether the agency should finalize a rule that creates an exemption for HFC–134a only or all MVAC refrigerants not exempt from the venting prohibition; (3) whether the agency should create an alternate self-sealing valve standard or use the CARB standard; (4) whether other standards exist or if other organizations are developing their own standards; (5) whether EPA should require labeling of small cans stating the refrigerant cannot be intentionally vented[9]; (6) whether allowing the sale of small cans would allow individuals to circumvent the proposed sales restriction for stationary appliances; and (7) whether EPA should finalize an earlier compliance date than one year after publishing a final rule, such as six or nine months after publication of a final rule, if it is coupled with a sell-through provision for all small cans manufactured or imported prior to that effective date. A fuller discussion of effective and compliance dates can be found in section IV.M of this proposal.

[9] See the CARB document titled, ''*Certification Procedures for Small Containers of Automotive Refrigerant*'' for additional information on labeling.

D. Proposed Changes to the Evacuation Requirements in Section 82.156

1. Background

Under EPA's existing regulation at § 82.156(a), ODS refrigerant must be transferred to a system receiver or to a certified recovery and/or recycling machine before appliances are opened for maintenance, service, or repair. The same requirement applies to appliances that are to be disposed of, except for small appliances, MVACs, and MVAC-like appliances which have separate requirements currently under § 82.156(g) and (h). To ensure that the maximum amount of refrigerant is captured rather than released, EPA requires that air-conditioning and refrigeration appliances be evacuated to specified levels of vacuum.

2. Extension to Substitute Refrigerants

EPA is proposing to extend the requirements at § 82.156 for appliances containing ODS refrigerants to appliances containing non-exempt substitute refrigerants. Therefore, before appliances containing non-exempt substitute refrigerants are opened for maintenance, service, or repair, the refrigerant in either the entire appliance or the part to be serviced (when it can be isolated) must be transferred to a system receiver or to a certified recovery and/or recycling machine. The same requirements would apply to equipment that is to be disposed of, except for small appliances, MVACs, and MVAC-like appliances, which have separate requirements.

i. Evacuation Levels for Appliances Other Than Small Appliances, MVACs, and MVAC-Like Appliances

EPA is proposing revisions to § 82.156(a) such that appliances other than small appliances, MVACs, and MVAC-like appliances containing non-exempt substitute refrigerants be evacuated to the levels established for CFCs and HCFCs with similar saturation pressures. These levels are based on the saturation pressures of the refrigerant, which is a characteristic of the refrigerant independent of whether or not it is an ozone-depleting substance. As is the case for CFCs and HCFCs, the appropriate evacuation levels for HFCs and other substitutes would depend upon the size of the appliance and the date of manufacture of the recovery and/or recycling equipment. Technicians repairing MVACs and MVAC-like appliances containing a substitute refrigerant would not be subject to the evacuation requirements below as they are currently subject to the requirement to ''properly use'' (as defined at § 82.32(e)) recovery/recycling and recovery-only equipment approved pursuant to § 82.36(a).

ii. Evacuation Levels for Small Appliances.

EPA is proposing revisions to § 82.156(b) to establish the same evacuation requirements for servicing small appliances charged with non-exempt substitute refrigerants as it has for small appliances charged with ODS refrigerants. Technicians opening small appliances for service, maintenance, or repair would be required to use equipment certified either under appendix B, based on AHRI 740, or under appendix C, Method for Testing Recovery Devices for Use with Small Appliances, to recover the refrigerant.

Technicians using equipment certified under appendix B would have to pull a four-inch vacuum on the small appliance being evacuated. Technicians using equipment certified under appendix C would have to capture 90 percent of the refrigerant in the appliance if the compressor is operational, and 80 percent of the refrigerant if the compressor is not operational. Because the percentage of refrigerant mass recovered is very difficult to measure on any given job, technicians would have to adhere to the servicing procedure certified for that recovery system under appendix C to ensure that they achieve the required recovery efficiencies.

EPA also is proposing revisions to § 82.156(b) to establish the same evacuation requirements for disposing of small appliances that are charged with non-exempt substitute refrigerants as it has for small appliances charged with ODS refrigerants. Providing a consistent standard for ODS and non-exempt substitute refrigerants will facilitate the recovery of both ODS and non-ODS refrigerants. MVACs and MVAC-like appliances would have to be evacuated to 102 mm (approximately equivalent to four inches) of mercury vacuum, and small appliances would have to have 80 or 90 percent of the refrigerant in them recovered (depending on whether or not the compressor was operational) or be evacuated to four inches of mercury vacuum. EPA notes that the original wording in the regulation was whether or not the compressor was ''operating'' rather than ''operational.'' This change to ''operational'' matches the preamble to the 1993 Rule (58 FR 28668) which initially describes the standard. This change also reflects the intent of the standard, which is to allow for a lower recovery rate when the small appliance does not work.

EPA is also proposing to make the evacuation requirements for small appliances the same whether it is being opened for servicing or it is being disposed of. This new provision would apply to both ODS and substitute refrigerants. Currently, when using recovery equipment manufactured before November 15, 1993, a technician servicing a small appliance containing an ODS need only recover 80% of the refrigerant. The existing disposal requirements do not provide a category for the use of pre-1993 recovery equipment. EPA is proposing to allow that 80% level of evacuation for disposal to simplify and unify the requirements. This change will have minimal effect as few people continue to use recovery equipment manufactured prior to that date.

EPA has authority under section 608(c) and 608(a) to require that appliances containing a substitute refrigerant be properly evacuated. The Agency has the authority to specify what practices constitute a good faith attempt to recapture substitute refrigerants in order to extend the *de minimis* exemption from the venting prohibition to substitute refrigerants. Such practices can include a requirement that an appliance be properly evacuated prior to servicing or disposal. Additionally, providing a consistent standard for ODS and substitute refrigerants will facilitate the recovery of both ODS and non-ODS refrigerants. Increased recovery of ODS refrigerant will reduce the emission of such refrigerants. The full discussion of the authority for this action is found in section III of this notice.

3. Records for Disposal of Appliances With a Charge Between Five and 50 Pounds

EPA is proposing to add new recordkeeping requirements at § 82.156(a)(3) for the disposal of appliances normally containing more than five and less than 50 pounds of either ODS or substitute refrigerant. Most of these appliances are disassembled in the field before the components are recycled or disposed of. Under the proposed revisions, records would document the company name, location of the equipment, date of recovery, and the amount and type of refrigerant removed from each appliance prior to disposal. In addition, EPA is proposing to require that records be kept to document the quantity and type of refrigerant that was shipped or sold for reclamation or destruction (*e.g.,* to a certified reclaimer or refrigerant distributor or wholesaler). This requirement would apply to all technicians recovering refrigerant from appliances, not just those with a full charge between five and 50 pounds. The technician, or the company employing the technician, would be required to maintain these records for three years.

Under the current regulations, whenever ODS refrigerant is added or removed from an appliance with 50 pounds or greater of full charge, the technician must generate a service record documenting the addition or recovery. EPA also requires records documenting that ODS refrigerant was properly recovered from small appliances (hermetically sealed appliances with 5 pounds or less of full charge), MVACs, and MVAC-like appliances. EPA discusses elsewhere in this notice its proposal to extend those requirements to appliances containing non-exempt substitute refrigerants. There are currently no recordkeeping requirements for the addition or recovery of refrigerant in appliances normally containing more than five and less than 50 pounds of refrigerant. Because of this gap in regulatory coverage and for the reasons described below, EPA is proposing to require recordkeeping by any person recovering refrigerant from an appliance normally containing more than five and less than 50 pounds of ODS or non-exempt substitute refrigerant.

EPA has heard from stakeholders that venting regularly happens in appliances of this size. At a recent meeting EPA attended with air-conditioning and refrigeration contractors, the attendees were asked what percentage of technicians recover refrigerant. The estimates were generally between 10 to 30 percent, with the caveat that recovery is much more common in the refrigeration industry than the air-conditioning industry. EPA also receives numerous tips each year of someone cutting refrigerant lines to quickly and illegally dispose of appliances of this size. While none of this feedback is conclusive, it is likely that venting occurs in violation of the CAA with some frequency.

The potential emissions from appliances containing more than five and less than 50 pounds are significant. Using EPA's Vintaging Model,[10] EPA estimated the number of appliances in this size category that are disposed of annually and the full charge of those appliances. EPA estimates there are 6.6 million appliances with a full charge of 27,300 MT of refrigerant (49.5 $MMTCO_2eq$ GWP-weighted MT, 960 ODP-weighted MT) disposed of annually. This represents 45 percent of the total amount of HCFC and HFC refrigerants charged into all appliances being disposed annually. Thus, under the current regulations, there is a significant amount of refrigerant, especially from a climate perspective, that could be vented without any record being generated to document recovery or facilitate enforcement. EPA's benefits assessment does not calculate any additional emissions reductions from this proposal because the existing regulations already require recovery when appliances are disposed. However, in practical terms, requiring a record from each disposal event should drive more technicians to comply with the existing requirement. This change also improves rule effectiveness by creating uniform expectations so the technician knows that a record is required when disposing of any appliance, not just appliances with 50 or more pounds of refrigerant or small appliances, MVAC, and MVAC-like appliances.

EPA has also heard from stakeholders, including in public fora such as the public meeting in November 2014, that EPA should increase enforcement of the venting prohibition. They indicated that technicians will knowingly and illegally vent refrigerant if they think EPA will not bring an enforcement action. While cases have been brought against individuals who have illegally vented refrigerant, having a recovery record would improve the success of future cases. After discussions with stakeholders, establishing a recordkeeping requirement for the category of appliances that are most frequently vented by technicians would be the most practical and least burdensome way to improve the Agency's ability to enforce the venting

[10] EPA's Vintaging Model estimates the annual chemical emissions from industry sectors that have historically used ODS, including air-conditioning and refrigeration. The model uses information on the market size and growth for each of the end-uses, as well as a history and projections of the market transition from ODS to alternatives. The model tracks emissions of annual ''vintages'' of new equipment that enter into operation by incorporating information on estimates of the quantity of equipment or products sold, serviced, and retired or converted each year, and the quantity of the compound required to manufacture, charge, and/or maintain the equipment.

prohibition. Technicians who do not recover refrigerant and do not have records to show that they recover refrigerant would be open to enforcement action under the proposed changes.

EPA understands that some, but nowhere near all, appliances are disposed of because they have broken down and lost their full refrigerant charge. In such cases, to comply with the requirement technicians would only need to note that they attempted to recover refrigerant but none was present.

EPA has authority to establish this requirement under sections 608(a), 608(c), 114, and 301(a) consistent with the description of these authorities offered above. Section 608(a) gives EPA explicit authority to implement requirements that reduce ODS refrigerant emissions to the lowest achievable level. This proposed recordkeeping requirement would further the recovery of ODS refrigerants and discourage the illegal venting of such refrigerants from appliances containing more than five and less than 50 pounds of refrigerant. Because it would minimize the emission of ODS refrigerant, EPA has authority for this proposal as it relates to ODS appliances under 608(a).

EPA also has authority under sections 114, 608(c), and 608(a) to require that technicians document that appliances containing a substitute refrigerant have been properly evacuated. Section 114 of the CAA provides the primary authority to establish these recordkeeping and reporting requirements. In addition, the Agency has the authority to specify what practices constitute a good faith attempt to recapture substitute refrigerants in order to extend the *de minimis* exemption from the venting prohibition to substitute refrigerants. Such practices can include documentation and recordkeeping. Additionally, providing a consistent standard for ODS and substitute refrigerants will facilitate the recovery of both ODS and non-ODS refrigerants. Increased recovery of ODS refrigerant will reduce the emission of such refrigerants. The full discussion of the authority for this action is found in section III of this notice.

EPA seeks comments on this proposed recordkeeping requirement. Specifically, EPA seeks comments on whether keeping track of refrigerant recovered from appliances and sent off-site for reclamation, refrigerant banking, or destruction is a common practice for these appliances. EPA also seeks comments on whether this requirement would close the recordkeeping gap or if EPA should remove the lower limit of below 5 pounds. EPA expects that some appliances (*e.g.* some mini split AC and small remote condensing refrigeration systems) may not be covered by this recordkeeping requirement because they have charges less than 5 pounds. Therefore, EPA also specifically invites comments on whether this requirement should apply to all appliances that are disassembled in the field, regardless of the charge size. Likewise, EPA requests comments on whether the proposed records for five to 50 pound systems should be kept for appliances containing more than 50 pounds given the proposed recordkeeping requirements for appliances with 50 or more pounds (*see* discussion in section IV.F).

4. Clarifications and Edits for Readability

EPA is proposing to move the provisions of § 82.156 ''Required Practices'' into three separate sections: § 82.155 would address the safe disposal of small appliances, MVACs, and MVAC-like appliances; § 82.157 would address appliance maintenance and leak repair for appliances containing 50 or more pounds of refrigerant; and § 82.156 would address the proper evacuation of refrigerant from appliances. These provisions tend to affect different stakeholders so dividing them into separate sections will make the required provisions easier to find.

Within § 82.156, EPA is proposing to separate the evacuation requirements into the following categories: (a) Appliances other than small appliances, MVACs, and MVAC-like appliances; (b) small appliances, and (c) MVACs and MVAC-like appliances. With the exception of the evacuation of small appliances for disposal using recovery equipment manufactured before November 15, 1993, this proposed reorganization would not change the current evacuation requirements for the different types of appliances under § 82.156.

Within § 82.156(a) and (b), EPA is proposing to reorganize the requirements to state the general requirement first followed by specific circumstances that allow for different evacuation levels. EPA is not proposing to change the required levels of evacuation in table 1. Nor is EPA proposing to change the circumstances that would allow for alternate evacuation levels or to change those alternate levels.

E. Proposed Changes to the Safe Disposal Provisions in Section 82.156(f)

1. Background

In the 1993 Rule, EPA established specific requirements for the safe disposal of small appliances, MVACs, and MVAC-like appliances containing ODS refrigerant that enter the waste stream with the refrigerant charge intact. Under the existing rules at § 82.156(f), persons who take the final step in the disposal process of such appliances must either recover any remaining refrigerant in the appliance or verify that the refrigerant has previously been recovered from the appliance or shipment of appliances. If they verify that the refrigerant has been recovered previously, they must retain a signed statement attesting to this or a contract from the supplier of the appliances for three years. Recovery equipment used to remove the refrigerant must meet certain standards but does not need to be certified by a third party. Persons recovering the refrigerant need not be certified technicians.

2. Clarifications to the Existing Program

EPA is using this opportunity to clarify certain requirements of the existing safe disposal program. The safe disposal regulations require actions of three separate groups of people: the final processor, the supplier of appliances for disposal, and the person who recovers the refrigerant. The final processor is the person who takes the final step in the disposal process, typically a scrap recycler or landfill operator, where the appliance is in such a condition that the refrigerant cannot reasonably be expected to be recovered. The supplier is the person dropping off the appliance (or shipment of appliances) for disposal. The person who recovers the refrigerant may be the final processor, the supplier, or a separate third entity. As discussed below, to make the safe disposal requirements easier to find in the regulations, EPA is proposing to move these requirements to a new section § 82.155.

EPA is clarifying here that under the existing requirements refrigerant may be recovered at any stage in the disposal process, even prior to the supplier taking possession. As EPA stated in the 1993 Rule establishing the safe disposal program, ''the supplier to the final processor does not have to remove the refrigerant but then must assure, through an accompanying certification, that refrigerant has been removed earlier in the disposal chain. Any copies of the certificate of removal provided to the supplier could be passed on to the final processor.'' (58 FR 28704–28705). EPA's intent has been to provide the flexibility needed to permit the recovery of refrigerant by the entity in the disposal chain that can accomplish that task most efficiently while at the same time establishing a mechanism to help ensure that the refrigerant has not simply been illegally vented. This signed certification serves both goals.

EPA also wishes to address potential confusion related to whether the rules apply to equipment that is crushed or has had components removed. As EPA stated in the 1993 Rule, ''the Agency understands that crushed automobiles commonly arrive at scrap facilities and that such automobiles no longer contain refrigerant. Consequently, it may be safely presumed that refrigerant is no longer present in equipment that is received in such condition. This clarification does not alter the responsibility to obtain certification when receiving equipment from suppliers.'' (58 FR 28704). A scrap facility is still the final disposer in this situation. Therefore, a scrap facility would have to receive the proper certification from their supplier of the disposed appliances in order to accept the appliances.

3. Extension to Substitute Refrigerants

EPA is proposing to extend the safe disposal provisions that currently exist at § 82.156(f) for small appliances, MVACs, and MVAC-like appliances containing ODS refrigerants to the same types of appliances that contain non-exempt substitute refrigerants. Consistent with the general discussion in Section III above concerning the authority to extend provisions of subpart F to substitute refrigerants, extending these requirements is important to implementing the 608(c)(2) venting prohibition for substitute refrigerants because it would define practices that would qualify as ''good faith attempts to recapture and recycle or safely dispose'' of the substitute refrigerant when disposing of small appliances, MVACs, and MVAC-like appliances and thus qualify for the *de minimis* exemption to the venting prohibition.

The rationale for establishing the safe disposal requirements for small appliances, MVACs, and MVAC-like appliances that contain ODS also applies to these appliances when they contain substitute refrigerants. These requirements are designed to ensure that refrigerant is recovered before the appliance is finally disposed of while granting as much flexibility as possible to the disposal facility regarding the manner of its recovery (58 FR 28702). Specifying how the substitute refrigerant be recovered will reduce the release of that refrigerant to the environment.

Such flexibility is important for the disposal sector, which is highly diverse and decentralized. Because the disposal infrastructure for appliances charged with substitute refrigerants is identical to that for appliances charged with an ODS, these considerations apply equally to appliances containing substitutes. In addition, applying a consistent set of disposal requirements to appliances containing ODS or substitute refrigerants will reduce confusion and minimize emissions of ODS and non-ODS refrigerant during the disposal process. Service technicians will not have to question whether the refrigerant in that appliance must be recovered or not. With the exception of specially labelled appliances using hydrocarbon refrigerants, the technician must recover refrigerant from all small appliances. Thus, the requirements for the safe disposal of appliances charged with substitute refrigerants should be the same as those for the safe disposal of appliances charged with CFCs and HCFCs.

Safe disposal of refrigerant from small appliances, MVAC, and MVAC-like appliances continues to be important for the environment and public health. According to EPA's Vintaging Model, the amount of refrigerant projected to be contained within MVAC and small appliances in 2015 will be more than 260 $MMTCO_2eq$ and 175 $MMTCO_2eq$, respectively. This constitutes 12.5 and 8.4 percent, respectively, of the total GWP-weighted amount of refrigerant contained within all appliances in the United States. On an ODP basis, EPA anticipates more than 1,400 ODP-weighted metric tons of refrigerant will be contained within small appliances in 2015, representing 5.0 percent of the refrigerant contained within all appliances in the United States. While these amounts decrease over time as zero-ODP and low-GWP substitute refrigerants are used in these appliances, the need for robust safe disposal requirements remains.

EPA requests comments on these proposed revisions.

4. Restructuring and Edits for Readability

First, EPA is proposing to create a single section, § 82.155, for all safe disposal provisions, including the recordkeeping and reporting requirements. Second, EPA is proposing to clarify what should be in the contract stating that refrigerant will be removed prior to delivery. EPA is proposing to replace the word ''remove'' which appears repeatedly in these provisions. What EPA means by ''remove'' in this context is that the refrigerant is recovered to the required evacuation levels using the appropriate equipment. EPA is also stating explicitly that which is implied in the current regulations. Specifically, as a result of the contract, the supplier of the appliances is responsible for recovering any remaining refrigerant or verifying that the refrigerant has already been evacuated.

EPA is also clarifying the format that the records required under this section may take. In general, where the regulations in subpart F require an individual to maintain records, the Agency intends for them to do so either in an electronic or paper format, preferably in an electronic system. Based on pre-proposal input from stakeholders, EPA is clarifying this point explicitly in the proposed revisions to the recordkeeping provision at § 82.155(c). EPA requests comments on these proposed changes and clarifications to the safe disposal requirements.

F. Proposed Changes to Leak Repair Requirements in Section 82.156(i)

1. Background

An important component of EPA's program to properly manage ODS refrigerants is the requirement to repair leaking appliances within 30 days if a certain leak rate is exceeded. Owners and operators of appliances normally containing 50 or more pounds of ODS refrigerant must repair their appliances if they leak above a certain rate. The current leak rate is 35 percent for commercial refrigeration appliances and IPR and 15 percent for comfort cooling and other appliances. If the attempt to repair fails to bring the appliance's leak rate below the applicable leak rate within that time frame, the owner or operator must develop a retrofit or retirement plan and implement it within one year of the plan's date. Owners or operators also have the option of developing a retrofit or retirement plan within thirty days of identifying that the leak rate has been exceeded. Owners or operators of IPR or Federally-owned appliances may have more than 30 days to complete repairs and more than one year to retrofit appliances where certain conditions apply (*e.g.,* equipment located in areas subject to radiological contamination, unavailability of necessary parts, and adherence to local or state laws that may hinder immediate repairs). The full suite of the existing requirements are found at § 82.156(i).

While the existing requirements are generally well-known by the industry, the program can be improved and EPA is therefore proposing amendments to do so in this notice. First, EPA is proposing to strengthen the requirements by lowering applicable leak rates, requiring periodic leak inspections, and setting a two-year leak limit, among other changes. Second, EPA is proposing to apply the leak repair requirements (as they would be amended) to non-exempt substitute refrigerants. Finally, EPA is proposing to modify the language, structure, and location of the requirements to make them more effective, easier to understand, and easier to find. This entails moving the requirements from § 82.156(i) to their own section at § 82.157.

EPA recognizes that refrigeration and air-conditioning equipment do leak. This is particularly true for larger appliances. However, these leaks can be reduced significantly. Experience with the GreenChill program, an EPA partnership designed to encourage supermarkets to reduce emissions of refrigerants and transition to low-GWP and low-charge refrigeration appliances, feedback from stakeholders in pre-notice meetings, and reports from California facilities regulated under the state's Refrigerant Management Program, among other factors discussed in this notice, support this conclusion. Through this proposal, EPA's aim is to reduce refrigerant releases by breaking the cycle of continuous repair and recharge of appliances and by requiring proactive monitoring to identify leaks early so that they can be addressed promptly to avoid ongoing releases.

EPA has previously proposed changes to strengthen the leak repair requirements that have never been finalized. In 1998, EPA proposed extending the leak repair requirements to substitute refrigerants and lowering the leak rates. Most recently, in the proposed 2010 Leak Repair Rule (75 FR 78558, December 15, 2010), EPA proposed changes to the purpose and scope, definitions, required practices, and reporting and recordkeeping sections for the leak repair program. EPA's intent in the 2010 proposal was to create a streamlined set of leak repair requirements that would apply to all types of appliances with large ozone-depleting refrigerant charges. EPA proposed the following notable amendments in that rule:

- Clarify that leak rate calculations are required upon addition of refrigerant;
- Lower applicable leak rates for currently regulated appliances;
- Require initial and follow-up verification tests for all repair attempts once the applicable leak rate is exceeded for comfort cooling and commercial appliances, and not just IPR (as is currently required), and written documentation of the results of those tests;
- Require a 24-hour waiting period after repairs before a follow-up verification can be conducted;
- Require the retrofit or retirement of the entire appliance if it experiences three component replacements or three failed verification tests during a consecutive six-month period (referred to as ''the worst leaker provision'');
- Exempt addition of refrigerant due to ''seasonal variances'' from the existing leak repair requirements;
- Allow all appliance owners/operators additional time to complete repairs due to unavailability of components, and not just IPR (as currently required);
- Require service technicians to maintain records on the fate of refrigerant that is recovered from but not returned to appliances during service; and
- Decrease the amount of time allowed for the completion of retrofit/retirement plans.

While the Agency never finalized the proposed 2010 Leak Repair Rule, EPA has factored feedback on that proposal, as well as the 1998 Proposed Substitutes Recycling Rule, into today's proposed rule. Based on comments generated by those proposed rules, EPA is not re-proposing the requirements to conduct follow-up verification tests at least 24 hours after a required repair or establishing the ''worst leaker provision.'' However, many of the proposed changes still can improve the leak repair program and decrease the release of refrigerants during the maintenance, service, repair, or disposal of appliances normally containing 50 or more pounds of refrigerant. Below EPA discusses the specific changes proposed in this action, some of which are novel to this rulemaking and some of which are adapted from the proposed 2010 Leak Repair Rule.

2. Extension to Substitute Refrigerants

EPA is proposing to extend the leak repair provisions currently in § 82.156(i) to appliances containing non-exempt substitute refrigerants. In addition, EPA is proposing that the other provisions related to leak repair and maintenance discussed in this section (*e.g.* leak inspections and leak limits) apply to appliances containing non-exempt substitute refrigerants as well. The mechanism by which EPA is extending the leak repair requirements to appliances containing substitute refrigerants is through the amended definition of the terms *refrigerant* and *appliance,* as described above. However, as discussed below in Section IV.M, while EPA is proposing that the amended definitions become effective on January 1, 2017, EPA is proposing a delayed compliance date (18 months from publication of the final rule) for the revisions to the leak repair requirements. Consistent with discussions elsewhere in this preamble, EPA is not proposing to extend these requirements to appliances using substances that have been exempted from the venting prohibition in specific end-uses, such as ammonia, that are listed in the regulations at § 82.154(a)(1).

Extending the leak repair requirements to non-exempt substitute refrigerants as proposed in this notice would lead to environmental benefits because these substances pose a threat to the environment when released and they may not be adequately controlled by other mechanisms. In the 2004 Rule, EPA determined that the release of HFCs and PFCs during the maintenance, servicing, repair, or disposal of appliances poses a threat to the environment. In making that determination, EPA examined the potential effects of the refrigerant from the moment of release to its breakdown in the environment, considering possible impacts on workers, building occupants, and the environment. Once released into the atmosphere, HFCs and PFCs have the ability to trap heat that would otherwise be radiated from the Earth back to space. This ability gives both HFCs and PFCs relatively high GWPs. The 100-year GWPs of HFCs under consideration as refrigerants range from 124 (for HFC–152a) to 14,800 (for HFC–23), and the GWPs of PFCs under consideration as refrigerants range from 7,390 (for PFC–14) and higher. HFC–134a, the most common individual HFC used in air-conditioning and refrigeration equipment, has a GWP of 1,430. See section II.C.2 of this preamble for further discussion related to the environmental impacts of greenhouse gases.

In determining whether to exempt HFC and PFC refrigerants from the venting prohibition in 2004, EPA concluded that these refrigerants have adverse environmental effects. For that reason, and because of a lack of regulation governing the release of such refrigerants, EPA did not exempt the release of HFC or PFC refrigerants from the statutory venting prohibition. Thus, the knowing venting or otherwise releasing into the environment of HFC and PFC refrigerants during the maintenance, service, repair, or disposal of appliances generally remains illegal.

EPA generally assumes compliance with the regulatory venting prohibition. Nonetheless, that prohibition addresses only knowing venting or release and thus does not account for all HFC refrigerant emissions. For instance, in previous rules we have not assumed that emissions of HFCs that occur due to appliance leaks constitute knowing releases. The requirements for leak inspections, leak calculations, and recordkeeping that EPA is proposing in this action would provide more knowledge to appliance owners and operators, as well as technicians, and thereby broaden the set of refrigerant releases for which they would be liable for a knowing release. In addition, as discussed below, EPA is proposing to revise its interpretation of what constitutes a knowing release under section 608(c) for purposes of appliance leaks.

EPA regulations at § 82.154(a)(2) currently state that ODS refrigerant releases shall be considered *de minimis* only if they occur when the required practices set forth in specified regulatory provisions, such as § 82.156 are observed. One of the required practices within that section is the requirement for owners or operators to repair leaks pursuant to paragraphs § 82.156(i)(1), (i)(2) and (i)(5) within 30 days after discovery. EPA has therefore intended that proper leak repair be a component of the required practices necessary to meet the *de minimis* exemption to the venting prohibition for ODS refrigerants. Consistent with the discussion above relating to the implementation of the statutory and regulatory *de minimis* provisions for substitute refrigerants, EPA is proposing to extend the leak repair provisions to non-exempt substitute refrigerants to clarify how the *de minimis* exemption in § 82.154(a)(2) applies to such substitute refrigerants and to provide regulatory certainty of what practices for leak repair would qualify for this exemption.

The Agency has the authority under section 608(c) to define the contours of the *de minimis* exemption by establishing regulations related to the maintenance, service, and repair of appliances that are leaking ODS or non-exempt substitute refrigerants. The prohibition in section 608(c) applies to the knowing venting, release, or disposal of refrigerants during the course of maintenance, service, repair, or disposal of an appliance ''in a manner which permits such substance to enter the environment.'' As explained above, this prohibition applies both to ODS refrigerants under section 608(c)(1) and to non-exempt substitutes under 608(c)(2).

EPA stated in 1993 when establishing the original leak repair provisions that:

> [T]he venting prohibition itself, which applies to the maintenance, service, repair, and disposal of equipment, does not prohibit 'topping off' systems, which leads to emissions of refrigerant during the use of equipment. The provision on knowing releases does, however, include the situation in which a technician is practically certain that his or her conduct will cause a release of refrigerant during the maintenance, service, repair, or disposal of equipment. Knowing releases also include situations in which a technician closes his or her eyes to obvious facts or fails to investigate them when aware of facts that demand investigation. (58 FR 28672)

EPA has subsequently moved toward a broader interpretation of the venting prohibition. In the proposed 2010 Leak Repair Rule, EPA stated that ''it is not necessarily a violation [of the venting prohibition] for an appliance owner or operator to discover a leak greater than the leak repair trigger rate; however it would be a violation of the proposed required practices at § 82.152 to allow that appliance to continue to leak above the trigger rate without making and verifying the efficacy of repairs in a timely manner'' (75 FR 78570).

EPA now views its statements in the 1993 Rule as presenting an overly narrow interpretation of the statutory venting prohibition. Consistent with the direction taken in the 2010 proposed leak repair rule, EPA is proposing a broader and more pragmatic interpretation of the venting prohibition under CAA section 608(c)(1) and (2) in this action. As a practical matter, when a technician must add refrigerant to an existing appliance, the technician necessarily knows that the system has leaks that will continue to release refrigerant to the environment if not properly repaired. That technician also knows that if he or she does not repair the leak, and verify that the repair has held, some or all of the newly added refrigerant will be released to the environment.

Therefore, EPA is proposing to interpret section 608(c) such that when a person adds refrigerant to an appliance that he or she knows is leaking, without repairing the leaks consistent with the applicable leak repair requirements, he or she also violates the venting prohibition, both because he or she knows that the appliance is releasing refrigerant to the environment as the appliance is being serviced and because he or she knows that some or all of the refrigerant newly added to the appliance will be released in a manner that will permit the refrigerant to enter the environment. With today's proposed revisions, the person performing this work will also have a set of provisions that can be followed to repair the leaks and to avoid violating the venting prohibition in this situation. This analysis applies for both ODS refrigerants and substitute refrigerants.

When initially establishing the leak repair provisions in subpart F, EPA relied on the authority in section 608(a)(3)(A) which states that ''the regulations under this subsection shall include requirements that reduce the use and emission of such [class I and class II] substances to the lowest achievable level.'' EPA used section 608(a) in part because the statute required EPA to establish regulations to reduce emissions of ODS refrigerants, whereas section 608(c) is a self-effectuating prohibition that applied to both ODS refrigerants and substitutes.[11] EPA, however, has also used rulemakings to clarify the requirements of section 608(c) for ODS. It is appropriate to do so now with regard to the knowing release of non-exempt substitute refrigerants from leaking appliances containing 50 or more pounds of such refrigerant and the application of the *de minimis* exception when leak repair requirements are followed for such appliances. As discussed below, EPA understands that few appliances are leak-free. However, the leak rate can be minimized by following the regulatory leak repair requirements. Under the revisions proposed in this rule, when those steps are followed, any release would fall within the *de minimis* exception, and the owner, operator and technician will not be violating the venting prohibition.

Consideration of Costs

Based on the evidence discussed below, the reported performance of today's comfort cooling, commercial refrigeration, and IPR appliances with full charges of 50 or more pounds argues for lowering the applicable leak rates. The evidence discussed below demonstrates that the current applicable leak rate is considerably above the

[11] Section 608(a) of the CAA continues to support the revisions to the leak repair requirements as those revisions relate to reducing emissions of ODS refrigerants. As such, and consistent with the description in Section III above, section 608(a) is one of the authorities EPA is relying on for proposed revisions in this rule that update requirements for ODS refrigerants, including proposed revisions to the leak repair provisions.

''lowest achievable level of emissions'' envisioned in CAA section 608(a)(3)(A).

While section 608(a)(3) does not require EPA to perform a cost-benefit analysis to determine what leak rate(s) would constitute the ''lowest achievable level of emissions,'' the analyses EPA performed of costs and benefits support establishing lower leak rates. The leak rates reported above, which generally fall well below the current regulatory maximum, are clearly being achieved in response to private incentives alone. If maintaining these leak rates is privately cost-effective, it is reasonable to assume they are also publicly cost-effective, because the public cost of emissions, which includes both the private value of the refrigerant and the environmental damage it causes, would exceed the private cost of emissions, which includes only the private value of the refrigerant.

In general, EPA balanced the need to reduce emissions of refrigerants with the costs of these requirements. EPA has determined that the costs are reasonable given the significant benefits that accrue (both private in the form of cost savings and public in the form of reduced GHG and ODS emissions). Specifically, EPA reviewed data from the lowest-emitting equipment to gauge technological feasibility and then reviewed other data sets, such as CARB data and consent decree requirements, to determine a reasonable set of requirements. EPA then assessed the costs and benefits associated with extending the existing requirements to appliances using substitute refrigerants and tighter requirements such as lower leak rates, the requirement to repair all identified leaks once the applicable leak rate is exceeded, the requirement to conduct verification tests on all types of appliances, and periodic leak inspections.

With regard to the quarterly leak inspections, EPA looked at charge size to determine the number of affected appliances. Using that estimate and the cost of more frequent leak inspections, EPA assessed the economy-wide costs of requiring quarterly leak inspections for appliances with a full charge of 200 or more pounds and 500 or more pounds. Based on that assessment of the costs and benefits of such a requirement, EPA is proposing a higher charge size threshold (500 pounds in commercial refrigerant and IPR appliances) for quarterly versus annual inspections. In addition, EPA is proposing to allow owners and operators of appliances to install automatic leak detection systems in lieu of conducting quarterly leak inspections as well as the opportunity for quarterly inspections to move to an annual schedule if the appliance is not leaking.

In addition, as EPA discusses below, EPA is proposing to provide flexibility to help minimize compliance costs of the existing regulations. For comfort cooling and commercial refrigeration appliances, EPA is proposing to allow an extension to the 30-day repair requirement if the arrival of a part is delayed, recognizing that the short additional time needed for delivery of a part can result in a nearer-term and less costly emission reduction than a retrofit. This is a change from the current requirements for ODS appliances, and would result in a significant reduction in compliance costs. EPA is also proposing to allow an extension to implement a retrofit or retirement for comfort cooling and commercial refrigeration appliances that transition to a non-exempt substitute refrigerant.

3. Restructuring and Edits for Readability

The current regulatory text has been modified several times since EPA first established the program in 1993. Some of those changes were a result of a settlement agreement between EPA and the Chemical Manufacturers Association (see 60 FR 40420). The regulation now contains numerous cross-references to other provisions in § 82.156(i), making the requirements difficult to follow and in some places potentially leading to differing interpretations. Many important provisions are buried, such as the primary requirement that repairs must occur within 30 days, which appears only at the end of the leak repair requirements at § 82.156(i)(9). Due to these concerns, EPA is proposing revisions that attempt to restructure the regulation to make it easier for stakeholders to understand whether they are subject to the requirements and what those are.

EPA is proposing to move the required practices currently in § 82.156(i) and the recordkeeping and reporting requirements in § 82.166(j), (k), (m), (n), (o), (p), and (q) to a newly-created section at § 82.157 titled ''Appliance maintenance and leak repair.'' EPA is proposing this title to more accurately reflect the goal of preventing releases of ODS and non-exempt substitute refrigerants during the maintenance of these appliances. Within that new section, EPA is proposing to restructure the requirements in a more linear and logical format.

EPA recognizes that proposing to change the text so significantly may make stakeholders who are familiar with the requirements wonder how these revisions might affect their current compliance monitoring systems and protocols. EPA does not intend to change the substance of the requirements while restructuring except where specified. EPA discusses proposed changes to the requirements in the following preamble sections that would result from this restructuring. EPA is also developing a series of comprehensive compliance assistance documents, in addition to other online support materials.

To avoid both ambiguity and cumbersome language throughout, EPA is proposing to establish from the outset in § 82.157(a) that the provisions of § 82.157 apply to owners and operators of all appliances containing 50 or more pounds of refrigerant, unless otherwise specified. When a provision applies to technicians or people servicing equipment the provision so specifies. The changes are not intended to shift responsibilities and EPA believes this change is not substantive.

The existing regulation also inconsistently describes the leak repair requirements as applying to appliances with ''50 or more pounds'' or ''more than 50 pounds'' of refrigerant. For example, in the existing recordkeeping requirements at § 82.166(j) and (k), persons servicing and owners/operators of appliances normally containing 50 or more pounds of refrigerant must keep records, whereas § 82.156(i)(1), (i)(2), and (i)(5) refer to appliances normally containing more than 50 pounds. EPA is proposing to consistently use ''50 or more pounds of refrigerant.'' Because of this inconsistency, EPA assumes that an owner or operator of an appliance that has a full charge of 50 pounds would take a conservative assumption when reading the current regulations and consider the appliance covered by the leak repair requirements. For that reason, EPA does not anticipate this change to have a significant effect.

EPA seeks comment on the proposed edits to restructure and clarify the regulations, including whether any other than those specifically discussed in this section of the preamble would alter the substance of the requirements and, if so, which edits would do so and how.

4. Lowering Applicable Leak Rates

EPA is proposing to lower the applicable leak rates for comfort cooling, commercial refrigeration, and IPR appliances containing ODS refrigerants, and to establish those same leak rates for such appliances using non-exempt substitute refrigerants. The leak rate is the rate of emission from an appliance requiring action from the owner/operator. EPA has proposed lowering leak rates twice previously for ODS-containing appliances, both in 1998 and 2010, but has not finalized either proposal. In both instances, EPA proposed lowering the leak rates to 20 percent or lower (from 35 percent) for IPR and commercial refrigeration appliances and to 10 percent or lower (from 15 percent) for comfort cooling appliances (63 FR 32044, 75 FR 78558). EPA is again proposing to lower leak rates to 20 percent and 10 percent, respectively, and has considered comments on those past proposals in the development of this notice as well as additional available information. This proposal would be for appliances containing both ODS and non-exempt substitute refrigerants, and EPA's rationale for these proposed edits is described in more detail below.

i. Commercial Refrigeration and Industrial Process Refrigeration Appliances

In general, leak rates are highest in large commercial refrigeration appliances and IPR. This is attributable to a number of factors. First, such appliances are generally custom-built and assembled at the site where they are used rather than in a factory (*e.g.,* unlike a household refrigerator). Appliances used in IPR are custom-designed for a wide spectrum of processes and facilities, including applications such as flash freezers aboard commercial fishing vessels to cooling processes used in the manufacture of pharmaceuticals to ice skating rinks. This results in the sector having an extraordinarily broad range of equipment configurations and designs. Custom designed equipment presents more challenges to original equipment manufacturers who wish to systematically implement leak reduction technologies. Second, these appliances generally use a long, single refrigerant loop for cooling that is not enclosed within a piece of equipment. This tends to raise average leak rates, particularly when the refrigerant loop flows through inaccessible spaces, such as underneath floors, or when used in challenging climates and operating conditions. Third, these appliances typically operate continuously. For example, shutting down a refrigeration appliance can lead to food spoilage in commercial refrigeration. In IPR, a full appliance shutdown can stop all production and is typically costly. This need for continuous operation can make repairing certain leaks more difficult.

EPA is proposing to lower the leak rate for both commercial refrigeration appliances and IPR from 35 percent to 20 percent. EPA has reviewed multiple sources of data to establish that 20 percent is a reasonable rate. As explained in more detail below, EPA reviewed GreenChill partner data, consent decrees of companies found to be in violation of subpart F regulations, and reported data from California's Refrigerant Management Program (RMP).[12] Additionally, EPA held numerous conversations with potentially affected stakeholders and reviewed comments on past proposed rules. EPA also assessed the possible benefits that could result from lower proposed applicable leak rates and other changes being proposed in this notice using the Vintaging Model and data from California.

First, EPA reviewed data from GreenChill, an EPA partnership with food retailers to reduce refrigerant emissions and decrease their impact on the ozone layer and climate change. Established in 2007, this partnership has over 20 member companies comprising almost 30 percent of all supermarkets in the United States. GreenChill works to help food retailers (1) transition to environmentally friendlier refrigerants; (2) lower refrigerant charge sizes; (3) eliminate leaks; and (4) adopt green refrigeration technologies and best environmental practices. One of the GreenChill partnership's programs that helps food retailers reduce their refrigerant emissions is the Food Retailer Corporate Emissions Reduction Program. Under this program, partners report their corporate-wide average leak rate for all refrigerants. A corporate-wide average leak rate is the sum of all refrigerant additions in a given time period for all of the refrigeration appliances owned by a corporate entity, divided by the full charge for all of the refrigeration appliances owned by that same corporate entity during that time period.

In 2014, the corporate-wide average leak rate for all reporting GreenChill partners was under 14 percent. Since the start of the program, the reported corporate-wide average leak rate for all partners has been at or below this level, even though the number of partners has grown. Several supermarket chains, including some having hundreds of stores, have consistently reported a corporate-wide leak rate below 10 percent. These confidential data support the conclusion that leak rates in commercial refrigeration appliances can be considerably lower than 35 percent and that a 20 percent leak rate is reasonable.

EPA has also reviewed how companies agreed to manage refrigerants through recent consent decrees with the Agency. In consent decrees with Safeway and Costco, the two companies agreed to bring their corporate-wide leak rates from about 25 percent to 18 and 19 percent, respectively. EPA also reviewed consent decrees with commercial fishing vessels. These consent decrees do not establish a corporate-wide level but in one specific case a facility was able to lower its leak rate considerably below 20 percent. These consent decrees provide additional support for the proposition that a 20 percent leak rate for commercial refrigeration and IPR appliances is reasonably achievable. These consent decrees are available in the docket.

EPA has also reviewed data submitted under California's RMP. California requires that owners or operators of any appliance with more than 50 pounds of ODS or HFC refrigerant repair leaks, conduct leak inspections or install automatic leak detection equipment, and report their refrigerant usage and repairs. In addition, any facility with a refrigeration appliance containing more than 50 pounds of refrigerant must report all service records annually to California.

CARB has categorized facilities based on the facility's largest appliance. Facilities that have at least one appliance with a full charge of 2,000 pounds or more (classified as "large" facilities under the RMP) began reporting in 2012 (for 2011 service records). These large facilities must submit service records for any appliance that has a full charge greater than 50 pounds. "Medium" facilities have at least one appliance with a full charge of 200 or more pounds but less than 2,000 pounds and they started reporting in 2014. "Small" facilities have at least one appliance between 50 and 200 pounds; they must begin reporting in 2016. This data set provides insight into the use and emissions of ODS and substitute refrigerants from refrigeration appliances in California.

EPA reviewed the 2013 data of large and medium facilities to determine the leak rates of those appliances. This was the only dataset currently available. Facilities reported on 10,362 appliances in this dataset. A series of charts showing the aggregated California data has been included in the docket. While the data are self-reported, and they do

[12] Among other requirements, the RMP establishes leak repair requirements for appliances with more than 50 pounds of refrigerant. More detail on the RMP is provided in the technical support document in the docket titled *Analysis of the Economic Impact and Benefits of Proposed Revisions to the National Recycling and Emission Reduction Program* and online at *www.arb.ca.gov/stoprefrigerantleaks.*

not include all commercial refrigeration and IPR appliances in California, they show that approximately 48 percent of reporting appliances did not leak at all in 2013. They also show that approximately 13 percent of appliances have an annual leak rate between 20 percent and 35 percent. An additional 22 percent of appliances are above a 35 percent annual leak rate. EPA considered these data to determine what an appropriate leak rate would be.

If EPA uses the California data as a proxy for the rest of the United States, the existing 35 percent leak rate for commercial refrigeration and IPR appliances (if extended to non-exempt substitutes) would only require reductions from 22 percent of refrigeration appliances, responsible for approximately 70 percent of emissions. By establishing a leak rate at 20 percent, the regulations would affect approximately 35 percent of appliances, responsible for almost 90 percent of emissions. The increase in the universe of affected entities when moving from a 35 to 20 percent leak rate is appropriate given the percentage of emissions (20% of total reported emissions) coming from those facilities. A 20 percent leak rate is also consistent with two past proposals to lower leak rates.

For the proposed 2010 Leak Repair Rule, EPA analyzed South Coast Air Quality Management District (SCAQMD) data on ODS-containing appliances. SCAQMD is responsible for controlling emissions primarily from stationary sources of air pollution. California South Coast Air Quality Management District is an air pollution control agency that services the areas of Orange County and the urban portions of Los Angeles, Riverside, and San Bernardino counties. At the time of the analysis in 2010, SCAQMD was responsible for 16 million people in a 10,743 square mile area, which was approximately half of the population of California.

Similar to the EPA's regulations under section 608 of the CAA, SCAQMD has issued Rule 1415 aimed at reducing emissions of ozone-depleting refrigerants from stationary refrigeration and air-conditioning systems. The rule requires any person within SCAQMD's jurisdiction who owns or operates a refrigeration system to minimize refrigerant leakage. A refrigeration system is defined for the purposes of that rule as ''any non-vehicular equipment used for cooling or freezing, which holds more than 50 pounds of any combination of class I and/or class II refrigerant, including, but not limited to, refrigerators, freezers, or air-conditioning equipment or systems.''

Under Rule 1415, SCAQMD used to collect the following information every two years from owners or operators of stationary refrigeration systems holding more than 50 pounds of an ozone-depleting refrigerant (*http://www.aqmd.gov/prdas/forms/1415form2.doc*): Number of refrigeration systems in operation; type of refrigerant in each refrigeration system; amount of refrigerant in each refrigeration system; date of the last annual audit or maintenance performed for each refrigeration system; and the amount of additional refrigerant charged every year. For the purposes of the rule, additional refrigerant charge is defined as the quantity of refrigerant charged to a refrigeration system in order to bring the system to a full capacity charge and replace refrigerant that has leaked. This reporting requirement has now been replaced by the statewide RMP required reporting.

In 2010, EPA reviewed data for over 4,750 pieces of equipment from SCAQMD covering 2004 and 2005. The data included refrigeration and air-conditioning appliances that meet EPA's existing and proposed definitions of IPR (*e.g.,* food processing industry, pharmaceutical manufacturing), comfort cooling (*e.g.* office buildings, schools and universities, hospitals), and commercial refrigeration (*e.g.,* refrigerated warehouses, supermarkets, retail box stores) from businesses of all sizes. The appliances that were evaluated all had ODS refrigerant charges greater than 50 pounds. EPA's review showed that lowering the leak rate to 20 percent for ODS-containing IPR would result in slightly less than 5 percent of systems facing mandatory repair within 30 days. It also showed that tightening of the leak rate for commercial refrigeration appliances to 20 percent would result in 8 percent of the 1,722 systems examined facing mandatory repair within 30 days.

At the time, EPA found that the SCAQMD leak repair data for commercial refrigeration appliances was consistent with EPA's analysis of the commercial refrigeration sector. For example, EPA estimated that annual leak rates for distributed (DX) systems range from 3 percent to 35 percent for in-use equipment, with higher annual leak rates (25%) in older appliances and the lower rates (15%) in newer appliances.

EPA proposed in 2010 to conclude that a 20 percent leak rate ''provides for continued flexibility in allowing appliance owners or operators to decide upon the necessary action needed to repair leaking appliances, and also provides for additional environmental benefit in terms of avoided refrigerant emissions'' (75 FR 78570). In coming to this assessment, EPA balanced the environmental benefits (in terms of ODS emissions reductions) with the costs of lowering the applicable leak rate for refrigeration appliances to a level between 10 percent and 30 percent. This analysis continues to be informative and is available in the docket for this rulemaking.

In 1998, EPA proposed to lower leak rates for appliances containing both ODS and substitute refrigerants. After reviewing leak rate data collected by the SCAQMD and data submitted by a midwestern supermarket chain, EPA proposed that the maximum permissible leak rate for new commercial refrigeration equipment (commissioned after 1992) be lowered to 10 percent per year, and that the maximum rate for old commercial refrigeration equipment (commissioned before or during 1992) be lowered to 15 percent per year.

For IPR, EPA proposed a two-rate system. IPR equipment would be subject to a 20 percent applicable leak rate unless it met all four of the following criteria in which case it would continue to be subject to the 35 percent leak rate:

(1) The refrigeration system is custom-built;

(2) The refrigeration system has an open-drive compressor;

(3) The refrigeration system was built in 1992 or before; and

(4) The system is direct-expansion (contains a single, primary refrigerant loop).

For today's proposal, EPA reviewed comments on these earlier proposals and held several recent conversations with industry. While some stakeholders, in particular IPR owners and operators, were not in support of leak rates lower than 35 percent, there appears to be more agreement among commercial refrigeration appliance owners and operators that 20 percent is reasonable. In comments in response to the 1998 Proposed Substitutes Recycling Rule, the Food Marketing Institute stated for commercial refrigeration that ''the targeted leak rates of 15 percent and 10 percent for equipment built before and after 1992, was unattainable . . . We believe that rates of 25 percent for equipment manufactured before 1992 and 20 percent for equipment manufactured after 1992 are more realistic.'' Similar comments were stated by major supermarket chains indicating that leak rates of 25% would be more practical and allow more effective refrigerant management. Given the passage of time, equipment manufactured after 1992 should now be a much larger share of the equipment being used, meaning that the earlier concerns regarding lowering the applicable leak rate for commercial refrigeration appliances to 20 percent may no longer apply.

EPA received three comments on the proposed 2010 Leak Repair Rule that were opposed to lowering the leak rates for commercial refrigeration appliances and IPR. One commenter raised concerns about the effect that lowering the applicable leak rate would have on chillers used in the generation of nuclear power. The proposed flexibilities in today's action, such as allowing extensions for all appliance types—not just IPR and Federally-owned appliances—should address that concern; however, EPA again seeks comment on this point. The other commenters stated that the costs of lowering the leak rate to 20 percent are too high. In addition to providing flexibility in the time needed to conduct repairs and retrofit or replace an appliance, EPA has assessed the compliance costs, cost savings, and environmental benefits of this proposed rule and has found that the aggregated costs are reasonable, and that lowering leak rates will result in fewer emissions of both ODS and substitute refrigerants. See the technical support document *Analysis of the Economic Impact and Benefits of Proposed Revisions to the National Recycling and Emission Reduction Program* for a complete discussion.

Based on the data sources discussed above, EPA is proposing to lower the applicable leak rate for commercial refrigeration appliances and IPR from 35 percent to 20 percent. EPA seeks comments on whether a 20 percent leak rate is appropriate given the evidence presented and in the docket, or if a higher (*e.g.,* the current applicable leak rate for ODS appliances) or lower leak rate (*e.g.* as low as 10 or 15 percent) is appropriate, and if so, what information supports such a higher or lower leak rate. EPA also seeks comment on whether there are other regulatory incentives that could provide a basis to go with a leak rate lower than 20 percent.

EPA has considered the 2010 proposed rule comments as part of the initial framing and background research, but we are not responding to those comments because they are not comments on what we are proposing in this notice. To the extent commenters have the same concerns, they should reiterate those concerns in their comments on this proposal.

ii. Comfort Cooling and All Other Appliances

EPA is proposing to lower the applicable leak rate for comfort cooling appliances and all other refrigeration appliances normally containing 50 pounds or more of refrigerant that do not fit into the other two categories (commercial refrigeration and IPR). EPA proposes to lower these leak rates from 15 percent to 10 percent. As explained in more detail below, 10 percent is reasonable given what we know about comfort cooling appliances.

In 1998, EPA proposed to reduce the leak rate for comfort cooling appliances using ODS or substitute refrigerants from 15 percent to 10 percent for comfort cooling appliances (the Agency specifically stated chillers in that proposal) built in 1992 or earlier, and from 15 percent to 5 percent for comfort cooling appliances built in 1993 or later. At the time, EPA noted that rates at which these appliances actually leak had decreased from between 10 and 15 percent per year to less than five percent per year in many cases (63 FR 32066). The Agency also noted that new comfort cooling appliances typically leak less than five percent per year, with many new comfort cooling appliances leaking around two percent per year, and some leaking less than one percent. Only one type of new equipment had been reported to have a leak rate above five percent: High pressure chillers with open-drive compressors, which have been found to have leak rates ranging from four to seven percent. Based on feedback and the assumptions used in EPA's peer-reviewed Vintaging Model used to estimate refrigerant use and emissions, this assessment continues to be valid.

In the proposed 2010 Leak Repair Rule, EPA proposed to lower the applicable leak rate for ODS-containing comfort cooling appliances from 15 percent to 10 percent. EPA made this proposal after reviewing data submitted to the SCAQMD. EPA reviewed data from 2,700 comfort cooling appliances and found that fewer than 1 percent of ODS-containing appliances would be required to repair appliances within 30 days if the leak rate was lowered to 10 percent. EPA also analyzed the costs and benefits of lowering leak rates to five percent for comfort cooling appliances. The analysis used in the proposed 2010 Leak Repair Rule found reducing the leak rate for this category of equipment to 10 percent provided the most benefit for the lowest cost. A full discussion of the analysis and rationale for the proposed 2010 Leak Repair Rule is available in the docket to this rule.

EPA has also included a memo in the docket titled *Analysis of Average Annual Leak Rates in Comfort Cooling Appliances (August 2015)* that goes into average leak rates of comfort cooling appliances as reported to SCAQMD and CARB, and as estimated in the Vintaging Model. These three sources indicate 10 percent is more than reasonable and that 15 percent may be too high a leak rate.

EPA seeks comments on establishing a 10 percent leak rate for ODS and non-exempt substitute refrigerants for comfort cooling and all other appliances that do not fit into the commercial refrigeration and IPR categories that contain 50 or more pounds of refrigerant. EPA also seeks comment on whether there are any other types of appliances that do not fit into either the comfort cooling, IPR, or commercial refrigeration appliance category. EPA seeks comments on whether a 10 percent leak rate is appropriate given the evidence presented and in the record, or if a higher (*e.g.,* the current applicable leak rate for ODS appliances) or lower leak rate (*e.g.* as low as 5 percent) is appropriate, and if so, what information supports such a higher or lower leak rate. EPA also seeks comment on whether there are other regulatory incentives that could provide a basis to go with a leak rate lower than 10 percent.

5. Requiring Periodic Leak Inspections

The current regulation at § 82.156(i) focuses on actions an appliance owner or operator must take after discovering an appliance has a leak, not on proactively finding leaks and reducing the release of refrigerant from them. To enhance the traditional repair requirement and to reduce emissions of refrigerant during the maintenance, service, and repair of appliances, EPA is proposing to require annual or quarterly leak inspections as a proactive maintenance practice depending on the type and size of the appliance.

The purpose of the proposed leak inspection requirement is to determine the location of refrigerant leaks, not for calculating whether the applicable leak rate has been exceeded. However, a leak inspection could identify a leak, resulting in the addition of refrigerant. Under today's proposal, the addition of refrigerant would trigger the requirement to calculate the appliance's leak rate. As explained in the definitions section of this proposal, leak inspections of the appliance's refrigerant circuit include using a calibrated refrigerant leak detection device, a bubble test, or visual inspection for oil residue. Again, leak inspections would not need to be conducted by certified technicians, but the agency would recommend some training for the person to ensure they are knowledgeable of the various leak inspection methods. EPA requests comments on whether there are methods of leak detection other than these three that would be sufficient for the purposes of this rule, and if these three methods are all appropriate.

Some owners, especially for large, complex appliances, will evacuate the system periodically to inspect for leaks and to determine the full charge of an appliance. EPA seeks comment on whether this should be added as another viable leak inspection technique. This option may be appropriate because of EPA experience administering a consent decree. One company was required as part of a consent decree to evacuate an appliance to determine the full charge and inspect for leaks. The Agency's understanding is that the company found the practice to be a useful way to also find and fix leaks earlier, and now evacuates the system annually to inspect for leaks. As a result, the company has been able to keep the leak rate of the affected appliance significantly lower, saving money on refrigerant and keeping equipment operating more efficiently. EPA is not proposing to require such evacuation, but is seeking comment on whether evacuation of an appliance should be another leak inspection option. EPA also seeks comment on the best way to describe this option in the regulation. Generally, EPA intends to allow leak inspections to be conducted by people who are not certified technicians. This option, however, would require a certified technician to do the work. EPA can see value in providing additional flexibility for owners and operators if they already conduct comprehensive leak inspections periodically by evacuating the appliance.

EPA is proposing to require that owners or operators of commercial refrigeration appliances or IPR normally containing 500 or more pounds of refrigerant conduct quarterly leak inspections of the appliance, including the appliance's refrigerant circuit. Inspections would be annual for commercial refrigeration appliances and IPR containing 50 pounds or more but less than 500 pounds of refrigerant, as well as comfort cooling appliances and other appliances normally containing 50 or more pounds of refrigerant. More frequent monitoring is important for larger commercial refrigeration appliances or IPR because those systems tend to have more leaks than comfort cooling appliances and because the amount of refrigerant that would be lost in a leak is greater.

The proactive quarterly or annual leak inspections, as currently proposed, are distinct from the leak inspection that EPA is proposing to require at § 82.157(e)(1) that occurs after discovering the leak rate had exceeded the applicable leak rate.

EPA recognizes that some appliances are more leak tight than others. Therefore, EPA is proposing to allow annual rather than quarterly inspections for commercial refrigeration appliances or IPR normally containing 500 or more pounds of refrigerant if they satisfy one condition: Refrigerant has not been added to the appliance for more than 365 days (excluding an addition for a seasonal variance as defined in this proposal). Not needing to add refrigerant is an indication that the system is not leaking. However, once refrigerant is added to an appliance, the appliance owner or operator must resume quarterly leak inspections.

As part of this proposal, EPA would not require periodic leak inspections if owners or operators install and operate an automatic leak detection system that continuously monitors the appliance for leaks. The leak detection system must meet the requirements described below, and the owner or operator must calibrate the system annually and keep records documenting the calibration. A system that meets these requirements and is properly operated will provide continuous information about whether a system is leaking, and thus quarterly inspections would be unnecessary.

EPA considered CARB's RMP when developing this proposal. The RMP's leak inspection provisions, which only cover refrigeration appliances with a full charge of more than 50 pounds, require the following:

- An automatic leak detection system that continuously monitors appliances normally containing 2,000 pounds or more of refrigerant;
- Quarterly leak inspections for all appliances with 200 or more pounds of refrigerant (unless an automatic leak detection system is installed) and annually for appliances with 50 to 199 pounds; and
- Leak inspections before adding refrigerant to an appliance and after a leak is repaired.

EPA's proposal for automatic leak detection equipment is based on CARB's requirements. EPA is proposing to use the same level of detection (10 parts per million of vapor) and notification thresholds (100 parts per million of vapor, a loss of 50 pounds of refrigerant, or a loss of 10 percent of the full charge) as in CARB's requirements. Such equipment is already available on the market and capable of meeting those standards.

Leak inspections have been seen within the industry as a best practice to reduce emissions of refrigerants and many facilities use this strategy. For example, numerous GreenChill partners have used this best practice with success to keep their leak rates down.[13] The 2014 corporate-wide average leak rate among all GreenChill partner stores was under 14 percent. While the Agency recommends fixing all leaks once they've been found, EPA recognizes that even well-maintained appliances subject to these provisions leak. Given that fact, EPA's lead proposal is to only require that all identified leaks from a leak inspection be fixed when the applicable leak rate is exceeded. EPA is proposing this option because the costs of repairing all leaks when the leak rate is below the applicable leak rate may not justify the benefits, especially when the leak is a series of small pinhole leaks and the leak rate is very low, as may often be the case. When the applicable leak rate is exceeded, the benefits are significant and do result in significant enough savings—both for the environment and for the owner/operator (in decreased refrigerant replacement costs), to warrant repair of all identified leaks. This proposal is also consistent with the current leak repair requirements: Owners and operators of appliances are only required to repair leaks once the applicable leak rate has been exceeded. This familiarity will reduce confusion and encourage compliance.

This lead proposal was designed with Next Generation Compliance objectives in mind. Even if EPA does not require the repair of all leaks that are identified during leak inspections, the Agency anticipates that many appliance owners and operators would take action earlier if leak leaks are identified because it is in their financial interest to do so and would reduce emissions and refrigerant costs. Repairing leaks earlier could also prevent that appliance from being pulled into the regulatory requirements at § 82.157 for exceeding the applicable leak rate.

EPA is proposing to require that the following records be maintained as part of the leak inspection requirements. First, owners or operators must keep records of leak inspections that include the date of inspection and any component(s) where the leak(s) are

[13] See GreenChill's *Best Practices Guidelines: Commercial Refrigeration Leak Prevention & Repairs,* May 2011, available in the docket for this rulemaking.

discovered. For systems that use an automatic leak detection system, a record must be kept of the annual calibration of the leak detection system. EPA seeks comment on whether it should require that continuous readings from the automatic leak detection equipment be maintained for some period of time (as few as three months or as long as three years) so the Agency can verify the automatic detection equipment is in fact being used continuously.

EPA has authority under section 608(a)(3) to establish ''requirements that reduce the use and emission of [ODS] to the lowest achievable level.'' Leaks will be identified sooner when appliances containing ODS refrigerant are regularly inspected. Leaks that are determined to be above the applicable leak rate must be repaired and it is likely that smaller leaks may also be fixed. As a result, leak inspections will reduce the emissions of ODS refrigerant. Additionally, providing a consistent standard for ODS and substitute refrigerants will reduce the incidence of failures to follow the requirements for ODS appliances and in turn reduce the emissions of ODS. For these reasons, EPA is relying in part on section 608(a) for authority to require leak inspections for appliances containing non-exempt substitutes.

Section 608(c) provides an exception from the venting prohibition for *de minimis* releases during maintenance, service, repair, and disposal. EPA has implicit authority to issue regulations explaining the contours of this exception. Leak inspections are themselves a form of maintenance and actions taken to address a leak are a type of repair or service. By performing periodic leak inspections, and repairing leaks as would be required in this proposal, the owners and operators both limit the immediate leakage and decrease the likelihood of leaks during future maintenance or servicing. Whether owners and operators are taking proactive leak prevention steps by inspecting for leaks as a regular maintenance practice is relevant to whether any emissions that do occur may be considered *de minimis* under section 608(c). Section 301(a) supplements EPA's authority under 608(a) and 608(c) as described previously.

EPA seeks comments on the proposed requirement for leak inspections. Specifically, EPA seeks comment on the frequency of leak inspections: Does the quarterly/annual requirement make sense, or should EPA require more frequent for some appliances (as frequent as once per month), or less frequent (as infrequent as once every six months) inspections? EPA also seeks comment on the whether all systems should have to conduct leak inspections using the same frequency, or with different requirements based on full charge. EPA also seeks comment on the 500 pounds full charge threshold for requiring quarterly inspections. Specifically, should EPA establish a lower full charge threshold (as low as 200 pounds), or a higher full charge threshold (as high as 1,000 pounds)? EPA also seeks comment on the proposed criteria for the exemption from the quarterly leak inspection requirement. The agency has proposed to base this on refrigerant additions in the past 365 days. However, EPA takes comment on whether basing this exemption on four consecutive quarters under the applicable leak rate or four consecutive quarters without identifying a leak would be more appropriate. EPA also seeks comment on whether a periodic (quarterly or annual) leak inspection should satisfy the requirement to conduct a leak inspection upon discovering a leak rate in excess of the applicable leak rate if the periodic leak inspection alerts the owner to the fact that the applicable leak rate has been exceeded and all identified leaks during the inspection are documented. Similarly, EPA seeks comment on whether a leak inspection conducted after the applicable leak rate was exceeded should replace a typically-scheduled quarterly or annual leak inspection. EPA also seeks comment on whether the agency should require the repair of all leaks identified during leak inspections regardless of whether the applicable leak rate has been exceeded, or only if the leak rate is above the applicable leak rate. For commenters on all of these alternative proposals, please provide as much specificity as possible and the reason why these changes would be more appropriate than the lead proposal, with special attention to the environmental outcomes resulting from the change.

EPA also seeks comments on alternative proposals for automatic detection equipment including: (1) Whether automatic detection systems should be inspected and calibrated more frequently than annually to ensure it is functioning properly (as frequently as quarterly); (2) whether EPA should require the installation of automatic leak detection systems for appliances with a full charge of 2,000 pounds or more, similar to California's requirement, instead of just requiring periodic leak inspections; and (3) whether owners and operators using automatic leak detection systems should be required to keep records of when a leak is identified and what actions were taken to repair that leak.

i. Extensions for Less Frequent Inspections

Consistent with past regulations implementing CAA section 608, EPA is proposing to establish a process that would allow owners or operators to request less frequent leak inspections for certain federally-owned appliances that are located in remote locations or are otherwise difficult to access for routine maintenance. Specifically, EPA is proposing that owners or operators of appliances in these unique situations would be allowed to request a less frequent leak inspection schedule (not to be less frequent than once every three years instead of the proposed annual or quarterly requirement that would otherwise apply). EPA is also considering establishing two years as the maximum amount of time that can pass between inspections, instead of three. None of the other appliance maintenance and leak repair requirements would be affected by this extension.

Any owner or operator of an appliance requesting an extension would have to show that the appliance has a history of minimal leakage and is remotely located or is otherwise difficult to access for routine maintenance. Additionally, the extension request should explain why installation of automatic leak detection equipment is not practical and what leak inspection schedule would be reasonable given the circumstances (not to exceed three years). EPA seeks comments on the establishment of this extension request process, if there are other conditions that should be established to gain approval from EPA, whether the longest interval between inspections should be two years instead of three, and whether this extension should only be available for comfort cooling appliances, since they are the most likely to be in locations that are remote or difficult to access routinely.

Given the attempt to harmonize appliance maintenance and leak repair extension requests elsewhere, EPA also seeks comments on whether privately-owned appliances face unique situations that make routine leak inspections or the installation of automatic leak detection equipment difficult, and whether EPA should apply this proposed extension request process to non-federally owned appliances as well. EPA may decide to finalize the proposed request process or a similar process for such unique situations. Commenters supporting such an extension should provide as much specificity as possible about these unique situations, the appliances at issue, why those appliances might qualify for an extension, and why installation of automatic leak detection equipment is not practical in these situations.

6. Two-Year Leak Limit

EPA is proposing a new requirement to address appliances that leak in excess of the applicable leak rate despite being repaired frequently. Under the existing rules at § 82.156(i), an appliance can exceed the leak rate as long as leaks are repaired in accordance with the regulations. If leaks frequently occur in multiple areas, this can result in appliances that have high leak rates on an annual basis yet are still in compliance with regulatory requirements through means of continuous repair. EPA is proposing to add a total leak limit to the repair requirement to address these chronically leaking systems.

Under this proposal, an appliance containing 50 or more pounds of refrigerant may not leak more than 75 percent of its full charge in two consecutive twelve-month periods and remain in use. Take, for example, an appliance that loses 95 percent of its full charge between June 1, 2017, and May 31, 2018 (measured by the cumulative refrigerant additions excluding seasonal adjustments). Between June 1, 2018, and May 31, 2019, that appliance would not be permitted to leak more than 75 percent of its full charge. If the amount lost in June 1, 2018, through May 31, 2019, exceeded 75 percent of the full charge, the owner or operator would be out of compliance starting June 1, 2019, until the appliance was retired or mothballed and later retired.

EPA reviewed data reported to CARB to determine whether a leak limit was necessary and, if so, what the limit should be. In 2013, approximately 8 percent of reporting appliances had leaked more than 75 percent of their full charge over the calendar year and were responsible for 38 percent of total reported emissions. As discussed, these appliances would not be out of compliance unless they were over 75 percent in two consecutive twelve-month periods. EPA looked only at a single one-year period because 2012 and 2014 data were not available at the time the proposal was developed. The data do support the fact that a small percentage of appliances are responsible for a larger proportion of emissions. EPA also looked at the percentage of appliances that had leaked more than 35, 55, and 100 percent over the calendar year to see how many appliances could be affected and what percentage of leaks they are responsible for. EPA seeks comment on whether it should finalize a higher or lower two-year leak limit.

Due to the high chronic leaks of such appliances, the environmental benefit of establishing a cumulative leak limit could be large. Nonetheless, the number of appliances affected by this proposed limit should be low. First, using a two-year limit should exclude appliances that suffered from a one-time catastrophic leak, many of which are largely unpreventable. A leak limit that is evaluated over two consecutive twelve-month periods allows for the possibility of an unpreventable catastrophic leak in one year without violating the prohibition, as long as leaks are reduced below the limit in the following year. Second, if the appliance maintenance and leak repair requirements proposed in this notice are finalized, they should prevent the leak limit from being reached. Only when an owner or operator continues to add refrigerant to a system without taking steps to repair the leaks would an appliance reach the two-year leak limit. Third, due to the proposed calculation and recordkeeping requirements discussed below, appliance owners or operators would be on notice that their appliance was leaking at an unacceptable level after the first year, and should have ample time to bring leaks down below the 75 percent leak limit in the following year. An appliance owner or operator that did not take action based on the calculation and recordkeeping requirements in order to meet the two-year limit would be participating in the knowing release of refrigerant during maintenance and servicing of the appliance.

EPA seeks comments on creating a leak limit and on the leak amount that should be used for such a leak limit. EPA seeks comments on whether it should finalize a leak limit that is lower or higher (as low as 35 percent, or as high as 100 percent). EPA seeks comments on whether it should establish a limit based on two consecutive 6-month periods or on just one year, instead of two consecutive twelve-month periods. EPA also seeks comments on whether the Agency should allow owners or operators to stay in compliance after exceeding the leak limit if they develop a retrofit or retirement plan and implement it within one year instead of being required to retire the appliance or mothball and later retire the appliance. This option would provide owners and operators with additional flexibility to remain in compliance while decreasing emissions of refrigerant. EPA also seeks comment on whether it should allow owners and operators to continue operating their appliance beyond the two-year (or shorter) period if they notify EPA that the reason they went over the leak limit was only because of one or more catastrophic leaks that were unavoidable. Under this alternative proposal, EPA would have to review the notification and determine whether there is enough documentation to verify that the leak or leaks were in fact catastrophic and could not have been prevented. If comments indicate an exception for catastrophic leaks should be provided, the agency would likely finalize a lower leak limit and would potentially shorten the timeframe over which the requirement would apply (*i.e.,* two consecutive six-month periods instead of two consecutive twelve-month periods). Finally, EPA seeks comment on whether the period, whether six months or twelve months, should be aligned with the calendar year, such that the first twelve month period would always be January 1 through December 31, or whether EPA should allow owners and operators to determine when each period begins. EPA sees advantages to both options (simplicity in the former option, but flexibility in the second).

7. Leak Rate Calculation

The existing regulations at § 82.156(i) do not explicitly require technicians or owners and operators to calculate the leak rate each time refrigerant is added to an appliance using an ODS refrigerant. Such action is implied since owners or operators may not be able to determine compliance without calculating the leak rate each time refrigerant is added to the appliance. For example, if a commercial refrigeration appliance owner adds refrigerant to the appliance but does not calculate the leak rate, the owner would have no means of determining if the appliance's leak rate was below 35 percent. Hence, the owner would not know if further action was warranted.

To reinforce the required practices, EPA is proposing to explicitly require owners or operators of appliances with 50 or more pounds of refrigerant to calculate the leak rate each time refrigerant is added to an appliance. EPA is proposing this requirement for appliances that use an ODS or non-exempt substitute refrigerant. EPA would provide exceptions for when refrigerant is added immediately following a retrofit, the installation of a new appliance, or to counter a seasonal variance (where records documenting the seasonal variance are maintained as proposed in this rule).

EPA is also proposing to add specific recordkeeping requirements to ensure that the owner or operator is aware of the leak rate. The limited records currently required from service technicians may not provide information needed by the appliance owner or operator to make decisions on the fate of the appliance. In addition, the records that are currently required to be provided by the technician do not match the records that are currently required to be maintained by the owner or operator. EPA is therefore proposing to require that service technicians provide more detailed records to the owner or operator of the appliance. The additional records would match the records that owners and operators of appliances must maintain. The service technician is generally in the better position to generate those records as they usually are the expert that the appliance owner or operator is relying on to make informed decisions about their appliances. With the addition of these requirements, an appliance owner or operator that failed to take required leak repair actions would be participating in the knowing release of refrigerant during maintenance, service, or repair of the appliance.

Specifically, EPA is proposing that whenever an appliance with 50 or more pounds of refrigerant is maintained, serviced, repaired, or disposed of, the technician must provide the owner or operator with an invoice or other documentation that indicates (1) the identity and location of the appliance; (2) the date and type of maintenance, service, repair, or disposal performed, including the location of repairs and the results of any verification tests or leak inspections (if applicable); (3) the name and contact information of the person performing the maintenance, service, repair, or disposal; (4) the amount and type of refrigerant added to and/or removed from the appliance (if applicable); (5) the full charge of the appliance (if refrigerant is added); and (6) the leak rate and the method used to determine the leak rate (if refrigerant is added). EPA is proposing identical recordkeeping requirements for appliance owners or operators who use in-house service personnel. EPA is also proposing to require that the owner or operator maintain records of all calculations, measurements, and assumptions used to determine the full charge and any revisions made to the full charge over time.

These proposed records are likely already provided by many service personnel and/or are being maintained by owners and operators. The current regulations already require technicians to provide an invoice or other documentation that includes the amount of ODS refrigerant added to the owner or operator. This would likely already include information on the system serviced, the date, and the company/person servicing the appliance. It would likely also include some description of the service provided. Owners and operators must already maintain service records documenting the date and type of service, as well as the quantity of ODS refrigerant added. Therefore, the only new information in most service instances for ODS systems would be the appliance's full charge and the leak rate, which would both be relatively simple since the owners and operators are required to have both available on-site. This will require communication between the owner/operator and the technician and/or access to past service records to ensure the technician can calculate the leak rate.

EPA seeks comments on this proposed change. In particular, EPA solicits comments on whether invoices containing this information are common practice and whether these records would be useful for owners and operators in determining what actions they should take to properly maintain their appliances or determining whether an appliance should be repaired or replaced.

8. Seasonal Variances

In regions of the country that experience large temperature swings during the year, refrigerant in some appliances can migrate from the condenser to the receiver. This migration results in a need to add refrigerant to an appliance to ''flood the condenser'' in the season of lower temperature ambient conditions (fall or winter). In this case, the added refrigerant would have to be removed when the weather returns to design ambient conditions to prevent high head pressures. This technique is often referred to as a winter-summer charge procedure or a seasonal adjustment. Seasonal adjustments are not necessary for appliances with properly sized system receivers because they can hold the appliances' full charge, including the additional charge needed to flood the condenser.

As discussed above, EPA has proposed to define seasonal variance as the addition of refrigerant to an appliance due to a change in ambient conditions caused by a change in season, followed by the subsequent removal of an equal amount of refrigerant in the corresponding change in season, where both the addition and removal of refrigerant occurs within one consecutive 12-month period.

EPA is proposing only to allow owners or operators to exclude the amount added from the leak rate calculation if the amount removed is equal to or greater than the amount added during the prior season. In a properly charged, non-leaking system, adding refrigerant during months with lower ambient conditions (fall or winter) would require an equivalent amount of refrigerant to be removed in the months with higher ambient conditions (spring or summer). If less is removed in the spring/summer than was added at the start of fall/winter, the difference between the two would be considered a leak and not a seasonal addition. Without requiring that the amount added be equal to the amount removed to qualify for the exemption, there is no way to distinguish legitimate seasonal variances from refrigerant leaks. EPA expects only one addition and one removal of refrigerant to account for seasonal variance. If the amount added is equal to or less than the amount removed in the previous season, but an additional amount is added in close proximity (typically within a few days to a few weeks) to the addition being counted as a seasonal variance, it would be considered part of the same refrigerant addition unless the owner or operator could document a leak.

EPA is proposing at § 82.157(c) to recognize that the leak rate does not need to be calculated when adding refrigerant to account for a seasonal variance. Both the addition and subsequent removal of refrigerant due to seasonal variances must be documented. Such additions and removals would already be accounted for in service records provided by the technician to the owner/operator. EPA is proposing to state the recordkeeping requirement explicitly in § 82.157(l)(4).

EPA proposed to allow for seasonal variance in the proposed 2010 Leak Repair Rule and received two comments on that rule. One commenter indicated support, while the other commented that the amount added in one season may not always match the amount removed later in the year, but provided no additional support for this assertion.

EPA seeks comments on the need for a limited exclusion to the requirement to calculate the leak rate upon addition of refrigerant for seasonal variance. EPA also seeks comment on whether the seasonal variance provision should be a limited exclusion from the requirement to calculate leaks as discussed above, or if the provision should establish a two-step test. First, the owner or operator would have to determine if the amount added is equal to or less than the amount removed from the appliance in the previous season. If the amount was lower, they would not have to calculate the leak rate. If it was above, they would have to calculate the leak rate for the appliance using the difference between the amount added and the amount removed in the previous season. EPA also seeks comments on the need to document the capacity of the receiver, as well as a requirement making the exemption contingent upon an equivalent amount of refrigerant being removed and added over a consecutive 12-month period.

9. Appliance Repair

The existing required practices at § 82.156(i) generally require owners or operators of IPR (§ 82.156(i)(2)), comfort cooling appliances (§ 82.156(i)(5)), and commercial refrigeration appliances (§ 82.156(i)(1)) with refrigerant charges of more than 50 pounds to repair leaks within 30 days, unless owners or operators decide to immediately retrofit or retire the appliance. Retrofit or retirement plans must be developed within 30 days of discovering the leak and must be fully implemented within one year of the plan's date. For those appliances not undergoing retrofit or retirement, the repairs must bring the leak rate to below the current applicable leak rate of 35 or 15 percent.

This existing requirement has allowed a scenario where owners or operators could decide to not repair all known leaks within an appliance, as long as repair efforts brought the leak rate of the appliance below the applicable leak rate. The challenge with such a scenario is that owners or operators may assume that they have done sufficient repairs to comply with the leak repair requirements, or may be in temporary compliance, but may find themselves out of compliance if they are mistaken about what the current leak rate was such that the repair was not sufficient, or if another leak resulting in a calculated leak rate greater than the applicable leak rate occurs shortly after the initial repair effort was completed.

EPA is proposing to require the repair of all identified leaks once the applicable leak rate at § 82.157(d)(2) is exceeded, not just repairs sufficient to bring the leak rate below the applicable leak rate. Leaving some appliance leaks unaddressed in such situations does not reduce emissions of refrigerants to the lowest achievable level and does not prevent knowing releases of refrigerant during current or future maintenance, service, or repair. Since selective repairs can result in preventable refrigerant emissions, and therefore knowing releases of refrigerant to the atmosphere, with associated human health and environmental effects, and may be inconsistent with the venting prohibition, EPA is proposing to require that owners or operators of appliances normally containing 50 or more pounds of refrigerant repair all identified leaks within 30 days of exceeding the applicable leak rate.

If finalized, this revision would mean that appliance owners or operators cannot be selective about repairs made to appliances that leak in excess of the applicable leak rate. This will remove ambiguity concerning compliance with the leak repair requirements and remove potential questions that could arise as to whether a repair attempt was sufficient to comply with the rules.

Many owners or operators (particularly of commercial refrigeration appliances and IPR) have stated that they always repair leaks, and must do so for their businesses to remain viable. EPA agrees that many businesses depend on the prompt repair of leaks and that it may not be in the financial interest of many appliance owners or operators to allow their appliances to continue to leak. However, there are appliance owners and operators that do not take appropriate steps to minimize refrigerant leaks. Hence, the Agency views the leak repair requirements as both a backstop to current repair practices for appliances that are well maintained, and necessary to ensure that refrigerant leaks during maintenance, service, and repair are kept to the lowest achievable level for appliances that are not as well maintained.

EPA reviewed comments received on the proposed 2010 Leak Repair Rule during the development of this proposal. The comments tend to fall into three categories: Practicality of fixing all leaks; time needed to fix all leaks; and clarification on when all leaks must be fixed. First, on the practicality of fixing all leaks, several commenters noted that some leaks cannot be identified without shutting down and fully evacuating and inspecting an appliance. Others noted that some leaks may be trivial and located on seals, gaskets, valves, and fittings where leakage occurs regardless of repairs. One commenter stated that all leaks should be fixed regardless of the location. Others raised concern about the cost and the diminishing value of fixing ever smaller leaks. Several of these commenters recommended the Agency focus on ''identified'' or ''known'' leaks, or alternatively, on setting the requirement at ''making a best effort'' to repair all leaks.

In considering these comments, EPA is proposing to require a leak inspection whenever the applicable leak rate is exceeded. EPA is not proposing to require evacuating or shutting down the appliance to conduct that leak inspection, although that would be an option available to owners and operators. The leak inspection would involve identifying and creating a record of leaks that must be repaired within 30 days. EPA recognizes that a small amount of refrigerant can migrate from an appliance even if the refrigerant circuit is unbroken. EPA is seeking comments on whether the agency should create a limited exception, which would provide that if upon further inspection (through bubble tests or other means), sound professional judgment indicates an individual identified leak is not the result of a faulty component or connection and that refrigerant releases would not be reduced from repair or adjustment, the leak would not need to be repaired. If this proposal is finalized, EPA would likely require that the justification for the determination be noted in the appliance's service records. EPA notes that there are certain types of situations that would never meet these conditions, including but not limited to when a component has holes, cracks, or improperly seated seals. All other leaks would still need to be repaired if the applicable leak rate is exceeded.

In addition to reducing emissions of high-GWP and ozone-depleting refrigerants, a refrigerant management program saves money in refrigerant and potentially energy expenses. EPA discusses the costs and savings later in this preamble, but preventive maintenance can save a significant amount of money even when factoring in the added cost of a more vigilant refrigerant management program, especially as the cost of some refrigerants such as HCFC–22 rises. Proposals to require repair of all identified leaks and conduct periodic leak inspections should incentivize owners and operators to develop a refrigerant management plan to proactively fix leaks before they become big enough to exceed the applicable leak rate. EPA's experience with several recent consent decrees indicates leak rates, even in complicated IPR applications, can be brought below the applicable leak rates proposed in this rule with a refrigerant management program that identifies and fixes leaks early.

Finally, it is possible that some leaks may not be fixable in 30 days. Later in this notice, EPA discusses the possible extensions to the 30-day leak repair requirement, including allowing these extensions for the repair of commercial refrigeration and comfort cooling appliances. Regardless, owners and operators should be fixing leaks as a normal course of business, which would largely prevent many of these requirements from ever being triggered. As noted above, the periodic leak inspections would help identify leaks earlier for repair, before those leaks are big enough to exceed the applicable leak rate.

EPA requests comments on the proposed requirement to repair all identified leaks when the appliance leaks above the applicable leak rate.

10. Verification Tests

Verification tests are performed on appliances after they are repaired to ensure that leaks have been fixed. The regulation at § 82.156(i)(3) currently requires verification tests only for repairs to IPR and Federally-owned commercial and comfort cooling appliances containing an ODS refrigerant and only when extensions to the 30 day deadline (or 120 day deadline when an IPR shutdown is required) are needed. Limiting the verification tests to such a narrow set of appliances is problematic, so EPA is proposing that all repairs should be verified.

First, the lack of verification may leave owners or operators of comfort cooling and commercial refrigeration appliances uncertain as to whether their repair efforts have brought them into compliance with the leak repair requirements. A lack of verification could allow for insufficient or incomplete repairs, which could lead to ongoing or future leaks during maintenance, service, or repair. Ongoing leaks, especially when they are at the same location or component in the appliance, could result in noncompliance with the current requirements if repairs did not actually bring the leak rate of the entire appliance beneath the applicable leak rate.

Second, EPA has considered the burden of conducting verification tests on all types of equipment and addresses that issue below. EPA cannot identify a reason why the burden could more easily be borne in those narrow circumstances in which verification is currently required by the regulations, given that some type of verification is generally a standard practice across all types of appliances. Third, the environmental benefit of verifying repairs applies to comfort cooling and commercial refrigeration appliances as well as IPR.

Therefore, EPA is proposing to require at 82.157(f) that owners or operators of all types of appliances that are subject to the leak repair requirements (including those using an ODS or non-exempt substitute refrigerant) perform both an initial and follow-up verification of repairs every time the applicable leak rate is exceeded (unless a retrofit or retirement plan is being developed).

EPA sought comments on this same proposal in the proposed 2010 Leak Repair Rule and received three comments. All were in support of extending verification tests to all covered appliances. EPA again seeks comments on requiring verification tests on all appliances normally containing 50 or more pounds of refrigerant. EPA sees a potential benefit in requiring both an initial and follow-up verification test to ensure a leak is repaired and that the repair will hold. EPA seeks comments whether both an initial and follow-up verification test are needed in all situations and seeks comments on requiring a minimum time between tests such as one to three hours to allow an appliance to return to normal operating characteristics and conditions.

EPA is also clarifying that owners or operators may conduct as many repair attempts as needed within the initial 30 days (or longer if an extension is available) to repair the appliance. Consequently, the Agency is proposing to explicitly allow unlimited verification tests within the required repair window. This is discussed further in the preamble section on retrofit and retirement plans.

The Agency understands that most technicians pressure check appliances immediately following repairs. EPA is proposing that such pressure checks would satisfy the initial verification requirements. EPA's concern is that follow-up verifications may not be a part of normal operating procedures for all repairs. Follow-up verifications require a technician to perform a second test after the appliance has returned to normal operating characteristics and conditions. A follow-up verification is an indicator of the success of repairs. Thus, EPA intends to require such verification for all appliances that have leaked refrigerant above the applicable leak rate.

EPA currently has not set a minimum amount of time that must pass between the initial and follow-up verifications. In the proposed 2010 Leak Repair Rule EPA proposed that the two tests be separated by at least 24 hours. Based on comments to that rule, the Agency is taking comment in this action on whether a shorter time such as one to three hours after the appliance is brought back on-line would be more appropriate. Regardless of whether EPA specifies an amount of time that must pass, all follow-up verification tests must take place after the appliance has returned to normal operating characteristics and conditions—both currently for IPR, and under the proposed change to require verification tests for repairs on all types of appliances with 50 or more pounds of class I, class II, or substitute refrigerant. EPA is also proposing to require follow-up verification tests to occur within 10 days of the successful initial verification test or 10 days of the appliance reaching normal operating characteristics and conditions.

11. Extensions to the 30-Day (or 120-Day) Repair Requirement

EPA currently provides extensions to the repair or retrofit/retirement deadlines for IPR and Federally-owned appliances under certain conditions. EPA has identified four conditions that exist in the current regulations:

- The appliance is mothballed (available for all appliances) (§ 82.156(i)(10));
- The appliance is located in an area subject to radiological contamination or where shutting down the appliance will directly lead to radiological contamination (available for Federally-owned appliances) (§ 82.156(i)(1)(ii) and (i)(5)(ii));
- Applicable Federal, state, or local regulations make a repair within 30 or 120 days impossible (available for IPR) (§ 82.156(i)(2)(i)); or
- Parts are unavailable (available for IPR) (§ 82.156(i)(2)(i)).

While not an extension, IPR facilities are also allowed an initial repair period of 120 days rather than 30 days if an industrial process shutdown is required to complete the repair. In addition, an exemption to the repair requirement is allowed for all types of appliances if a dated retrofit or retirement plan is developed and is implemented within one year of the date developed.

EPA is proposing at § 82.157(g) to make these extensions to the repair deadlines available to all appliance categories. EPA has heard from owners of commercial refrigeration appliances, for example, that they occasionally are unable to complete a repair due to the temporary unavailability of a component. They were therefore required to develop a retrofit and retirement plan even though a component could be acquired shortly after 30 days. While IPR may require custom components, the need for components is not unique to IPR. It does not make sense to require the retrofit or retirement of an appliance that can be repaired in situations such as when a single component is the problem and can be procured shortly after 30 days.

The extension for the delivery of components is open-ended in the current regulation. While the regulation provides only the additional time needed to receive delivery of the necessary parts, it does not set an outer limit for delivery nor does it clearly provide time to install the components once received. EPA is proposing at § 82.157(g)(1)(iii) to modify the extension so that the owner or operator must complete the repair within 30 days after receiving delivery of the necessary part and the total extension may not exceed 180 days (or 270 days if an IPR shutdown is required). As proposed, this extension may be more stringent for IPR because IPR owners/operators would be time-limited in conducting those repairs. EPA is not proposing to change the open-ended nature of the extensions due to radiological contamination or compliance with applicable Federal, state, or local regulations.

To qualify for an extension, owners or operators must perform all repairs that can be completed within the initial 30 or 120 day period. All repairs must be verified if possible and the owner or operator must document all such repair efforts. The owner or operator must maintain a written statement from the appliance or component manufacturer or distributor stating the unavailability of parts and the expected delivery date as part of the reason why more than 30 days are needed. EPA is not proposing to change the elements of the request for an extension that is submitted to EPA. Requests must continue to include: Identification and address of the facility; the name of the owner or operator of the appliance; the leak rate; the method used to determine the leak rate and full charge; the date a leak rate above the applicable leak rate was discovered; the location of leak(s) to the extent determined to date; any repair work that has been performed thus far, including the date that work was completed; the reasons why more than 30 days are needed to complete the repair; and an estimate of when the work will be completed. If requesting an extension to the earlier submitted completion date, a new estimated date of completion and documentation of the reason for that change must be submitted to EPA within 30 days. The owner or operator must keep a dated copy of this submission and proof that it was submitted.

EPA requests comments on applying the extensions to all appliance types, including whether such extensions should not be extended to certain appliances. EPA also seeks comments on the scope and amount of time allowed for each extension, and whether there are additional extension types that the Agency should consider allowing. Commenters supporting the creation of a new extension should provide detailed reasoning and cost implications (both for the environment and an owner/operator) in their comment.

12. Retrofit or Retirement Plans

EPA's regulations at § 82.156(i)(6) currently require an owner or operator of an appliance that exceeds the applicable leak rate to develop and implement a retrofit or retirement plan generally within 30 days if they are unable to repair the leak. EPA is proposing at § 82.157(h) three changes to the retrofit/retirement provision. First, EPA is proposing to remove the requirement to retrofit an appliance after a failed follow-up verification test. EPA is proposing to replace that provision with a requirement to retrofit an appliance if the owner or operator is unable to repair all identified leaks within 30 days after discovering the applicable leak rate is exceeded (unless additional time is allowed under one of the proposed extensions). Second, EPA is proposing to remove the requirement to use a substitute with a lower or equivalent ODP. Third, EPA is proposing to establish explicit elements of a retrofit/retirement plan. These three proposals are discussed below.

Failed Verification Tests. EPA's regulations currently require owners or operators of IPR using an ODS refrigerant that have failed a follow-up verification test to develop a retrofit or retirement plan within 30 days of the failed verification test and implement the plan within one year. Under these plans, owners or operators must identify how and when they will retire or retrofit their appliance. Owners or operators of comfort cooling and commercial refrigeration appliances are currently not required to perform verification tests and, in lieu of making repairs within 30 days, are given the option to draft and implement a retrofit or retirement plan within 30 days of discovering a leak rate greater than the applicable leak rate.

EPA has heard concerns from appliance owners/operators that the requirement to retrofit or retire an entire appliance because it has failed a verification test may not always be practical or necessary. For example, some owners or operators would prefer to replace a faulty component before they are required to retrofit or retire an entire appliance and believe this could in many instances be an equally effective means to address needed repairs. The Agency wishes to reduce the potentially large burden upon owners or operators of requiring a large-scale retrofit or retirement when replacing the leaking component might satisfactorily repair the appliance. Therefore, EPA is proposing to provide an owner or operator additional flexibility if they are unable to initially fix all identified leaks after discovering the applicable leak rate is exceeded.

This proposal would allow owners or operators to attempt as many repairs as necessary within the initial 30 days of discovering that an appliance's leak rate exceeds the applicable leak rate. This could include replacing a component. If that component cannot arrive within the initial 30 day period, the owner or operator could request additional time under the proposed provisions related to extensions discussed previously in this preamble. An owner or operator of an appliance would only have to retrofit or retire the appliance if the component replacement was unsuccessful and they could not repair all leaks that were identified in the leak inspection triggered by discovering that the applicable leak rate was exceeded.

This approach is based, in part, on feedback received from past proposals. In comments on the proposed 2010 Leak Repair Rule, several commenters supported additional flexibility to conduct repairs and/or component replacements before being required to retrofit or retire an appliance. Stakeholders have stated that a facility should be allowed an unlimited number of repair attempts to equipment within the 30 day time period. These stakeholders supported an option in the proposed 2010 Leak Repair Rule that would have allowed additional flexibility to replace components before being required to retrofit or retire a leaking appliance. The approach proposed in today's notice provides similar flexibility.

Because the retrofit/retirement plan requirements allow an appliance to leak without repairs for up to a year (in addition to extension opportunities), this change would likely increase the speed at which appliance repairs take place, thereby reducing emissions of refrigerants. This proposal also would eliminate the possibility of mandatory retrofitting or retirement in cases where it might not be warranted because the owner or operator would have the flexibility to determine if component replacement would be the best means of addressing a leaking appliance.

As discussed in the prior section, EPA is proposing to extend the requirement for verification tests to repairs made by owners or operators of commercial refrigeration and comfort cooling appliances using both an ODS and non-exempt substitute refrigerant. EPA is also proposing to extend the approach to retrofit and retirement described above to owners or operators of commercial refrigeration and comfort cooling appliances. Extending this approach to all appliances will reduce refrigerant emissions while establishing a consistent set of regulatory required practices.

Retrofit/Retirement ODP. EPA's regulations currently require that appliances containing an ODS refrigerant, when being retrofitted or retired/replaced, use a refrigerant with an equivalent or lower ODP. EPA created this provision to foster the transition from refrigerants with high ODPs to ones with a lower ODP. EPA is proposing to remove this requirement and allow for retrofits or retired/replaced appliances to use any refrigerant (other than the one currently used in that appliance in the case of retrofits), so long as it is acceptable for use by SNAP. This change would not relax the current requirements with respect to HCFCs since the regulations implementing sections 605 and 606 of the CAA already prohibit the manufacture (and therefore installation) of appliances using virgin HCFCs (as of January 1, 2010, for HCFC–142b and HCFC–22; and as of January 1, 2020, for other HCFCs). Requiring the use of a refrigerant with a lower or equivalent ODP could be problematic if the requirement were read strictly because some HFO refrigerants that are not classified as an ODS have an ODP even though the ODP is negligible. For example, HFO–1233zd(E) has an ODP between 0.00024 to 0.00034 and a GWP between 4.7 to 7 (see 77 FR 47768). Under a strict interpretation, if an owner/operator wanted to replace an R–134a chiller with an HFO–1233zd(E) chiller in future, he/she would not be able to switch from R–134a, which has an ODP of zero, to the HFO since the HFO has an ODP that, though negligible, is higher than zero. This could prevent transition to low-GWP alternatives.

EPA also wishes to clarify that the current requirement to retrofit with a refrigerant of the same or lower ODP does not mean that the same refrigerant can be used. Such actions do not satisfy the regulatory intent or the proposed definition of ''retrofit.'' The requirement to retrofit means the owner or operator must switch refrigerants. While the Agency is proposing to allow flexibility in refrigerant choices, the intent is not to allow the continued use of the same refrigerant in the retrofitted appliance. In cases where the owner/operator wants to use the same refrigerant and that refrigerant can continue to be used consistent with other applicable statutory and regulatory requirements, the owner/operator would have the option of retiring and replacing the appliance.

If an owner/operator chooses to retire and replace a system, EPA is not proposing to require under Subpart F that a different refrigerant be used because eventually there may not be a refrigerant to switch to that is better for the environment. At this time, EPA intends to rely on other 40 CFR part 82 regulatory requirements that do prohibit the use of some refrigerants, (*e.g.,* the prohibition on manufacture of systems using HCFC–22 under subpart A).

Elements of a Retrofit or Retirement Plan. Stakeholders have asked EPA what should be included in a retrofit or retirement plan. The Agency has not previously provided a specific list of elements to be included due to the complex nature of refrigeration appliances. An exhaustive list may not fit all types of appliances considering the wide array of configurations and refrigerant choices. However, EPA finds merit in specifying a minimum set of information that is likely to be needed during any type of retrofit or retirement.

EPA is proposing at § 82.157(h)(2) to require that a retrofit or retirement plan include the following minimum set of information:

• Identification and location of the appliance;

• Type (*i.e.* ASHRAE number) and full charge of the refrigerant currently used in the appliance;

• Type (*i.e.* ASHRAE number) and full charge of the refrigerant to which the appliance will be converted, if retrofitted;

• Itemized procedure for converting the appliance to the new refrigerant, including changes required for compatibility (for example, procedure for flushing old refrigerant and lubricant; and changes in lubricants, filters, gaskets, o-rings, and valves), if retrofitted;

• Plan for the disposition of recovered refrigerant;

• Plan for the disposition of the appliance, if retired; and

• One-year schedule for completion of the appliance retrofit or retirement.

Such requirements are a minimum of what should be considered by any owner or operator when retrofitting or retiring a leaking appliance. A retrofit or retirement plan may contain additional elements related to the specific characteristics of that appliance but EPA is not proposing requirements for those elements because they would more appropriately be determined on a case-by-case basis.

The Agency's preference would be to have a complete plan developed within 30 days. However, EPA recognizes that some information may not be available in that timeframe. For example, owners or operators may not know within the allotted time frame what the itemized procedure will be until they finalize plans for the retrofit or retirement. Under the itemized procedure heading, EPA is considering whether to allow owners or operators to include a placeholder such as ''Engineer consulted to evaluate retrofit and replacement options on [X] date. Engineers report expected in three months.'' Shortly after that report is delivered, the owner or operator would need to update the plan accordingly to indicate the procedure for retrofit or retirement and replacement.

EPA seeks comments on these proposed changes to the retrofit and retirement plans including the following questions: Should EPA allow for multiple repairs within the 30 day repair window? Should EPA apply the proposed changes to all appliance types? Should EPA remove the requirement to switch to a refrigerant with a lower or equivalent ODP? Should EPA require the use of a refrigerant with a lower or equivalent GWP?

The Agency also requests comments on the proposed minimum requirements of a retrofit or retirement plan. Are there other factors that should be considered when developing a retrofit/retirement plan? Is this information available within 30 days of deciding to retrofit or retire an appliance? Should EPA allow for the retrofit/retirement plan to have placeholders for some elements until the information is available, by noting specific actions that are needed to accurately document the plan?

13. Extensions To Retrofit or Retire Appliances

Under the current regulations at § 82.156(i)(6), an owner or operator must generally complete the retrofit or retirement of a leaking appliance containing an ODS within one year of creating a retrofit or retirement plan. There are extensions available in the following circumstances:

• If delays are caused by requirements of other applicable

Federal, state, or local laws or regulations (available for IPR);

• If a suitable replacement refrigerant with a lower ODP is unavailable (available for IPR);

• If the supplier of the appliance or a critical component has quoted a delivery time of more than 30 weeks from when the order is placed (available for IPR);

• If complications presented by the appropriations and/or procurement process results in a delivery time of more than 30 weeks (available for Federally-owned appliances); or

• If the appliance is located in an area subject to radiological contamination and creating a safe working environment will require more than 30 weeks (available for Federally-owned appliances).

EPA is proposing at § 82.157(i) four substantive changes to these extensions. First, as in all other leak repair provisions, EPA is proposing to apply these extensions to appliances containing non-exempt substitute refrigerants. As discussed in section III of this notice, providing a consistent standard for ODS and substitute refrigerants will facilitate the recovery of both ODS and non-ODS refrigerants and reduce the environmental harm caused by the emissions of these refrigerants.

Second, EPA is proposing to remove the extension offered when a suitable replacement refrigerant with a lower ODP is not available. EPA established this extension because there were certain applications using CFCs that did not have a suitable HCFC substitute. Today, there are many more substitutes for ODS refrigerants than when EPA established the refrigerant management program. In fact, few appliances can be newly-installed or retrofitted with virgin ODS because of the HCFC use restrictions implementing sections 605–606 of the CAA. As discussed above, EPA is not requiring that a retrofit use a refrigerant with a similar or lower ODP. Therefore, the rationale for this extension no longer exists. Because EPA is proposing to remove this requirement, EPA is also proposing to remove from the definitions in § 82.154 the term *suitable replacement refrigerant*.

Third, EPA is also proposing a new extension at § 82.157(i)(1) if the appliance is to be retrofitted to or replaced with a refrigerant that is exempt from the venting prohibition as listed in § 82.154(a). In that situation, EPA is proposing to allow an extension up to 18 months. Whereas the existing extensions are only available to IPR and Federally-owned appliances, EPA is proposing to make this extension, and all other extensions, available to comfort cooling and commercial refrigeration appliances as well.

Section 608(a)(3) provides authority to EPA to issue regulations that may include requirements to use alternative substances to ODS. Given this authority, and the distinction between exempt and non-exempt substitutes in section 612(c), the Agency is taking action to encourage the use of substances that do not pose a threat to the environment when released. Since many refrigerants have an ODP, a high GWP, or both, it is appropriate to allow more time to install a refrigerant that is exempt from the venting prohibition as an incentive for that type of transition. The refrigerants that are exempt from the venting prohibition, such as carbon dioxide (R–744), and the hydrocarbon refrigerants propane (R–290), isobutane (R–600a), and R–441A in certain uses, have no ODP and low GWPs ranging from one to eight. While the Agency would be allowing for potentially greater emissions in the short term by not requiring all repairs be completed for the 18 months allowed for a replacement with an exempt substitute, once the new appliance is installed, it will be using a zero ODP and very low-GWP refrigerant that does not pose a threat to the environment for a much longer period than the 18 month extension.

Fourth, while not an extension, per se, the current regulations at § 82.156(i)(3)(v) relieve owners and operators of IPR appliances of the requirement to retrofit or retire their appliances if they establish that the appliance's leak rate is below the applicable rate within 180 days of an initial failed follow-up verification test and they notify EPA within 30 days of that determination. Affected entities must report to EPA when they use this exemption and EPA has not received any reports on the subject in at least the last three to five years. Therefore, EPA is proposing to remove this exception entirely. The other proposed extensions, in particular the extension to receive a replacement component, should provide sufficient flexibility for IPR and other appliances.

EPA seeks comments on its proposals to restructure and simplify the extensions to retrofit or retire appliances. EPA also seeks comments on its proposal to remove the extension for transitioning to a suitable replacement refrigerant and the removal of § 82.156(i)(3)(v) as well as creating an extension for transitioning to a substitute refrigerant that is exempt from the venting prohibition.

14. Recordkeeping and Reporting

EPA is proposing to create a recordkeeping and reporting paragraph at § 82.157(m) to make these requirements easier to identify. Many of these requirements are identical to those currently included at § 82.166 for appliances containing ODS. In summary, EPA is proposing to establish the following recordkeeping requirements for owners and operators of appliances normally containing 50 or more pounds of class I, class II, or substitute refrigerant:

• Maintain documentation from leak inspections or that an automatic leak detection system is installed and inspected annually and recalibrated as needed in accordance with the leak inspection requirements;

• Maintain leak inspection extension requests submitted to EPA.

• Maintain records documenting the full charge of appliances;

• Maintain invoices or other documentation when refrigerant is added or removed from an appliance, when a leak inspection is performed, and when a verification test is conducted, and when service or maintenance is performed;

• Maintain retrofit and/or retirement plans;

• Maintain retrofit and/or extension requests submitted to EPA;

• Maintain records documenting when the system was mothballed and when it was brought back on-line (*i.e.* refrigerant was added back into the appliance);

• Maintain records of purged refrigerant if excluding such refrigerant from the leak rate; and

• Maintain all of the above-listed records for a minimum of three years.

Additionally, the proposed revisions would require persons servicing, maintaining, repairing, or disposing of such appliances to provide the owner or operator of such appliances with an invoice or other documentation when refrigerant is added or removed from an appliance, when a leak inspection is performed, and when a verification test is conducted, and when service or maintenance is performed.

Stakeholders have also told EPA that the Agency should make explicit our view that records can be kept electronically. EPA recognizes that many companies employ electronic databases to store and track records. An electronic recordkeeping system has advantages to paper records, and EPA encourages owners and operators of appliances to use one of these systems to track refrigerant additions and other required records. Electronic systems allow for more comprehensive refrigerant management and can help identify leaky appliances earlier. Given that fact, EPA is proposing to explicitly allow for electronic records. These records must still be accessible onsite if an EPA inspector visits a facility, but they can also be downloaded or printed from an online system if necessary. Having records accessible onsite is also important to facilitate accurate calculation of the leak rate by technicians.

For reporting, EPA is proposing to require that all reports be submitted to EPA via email at *608reports@epa.gov*. If the submission contains confidential business information, reports can be mailed to the address in § 82.160. This should reduce costs and streamline the reporting process. It is also consistent with EPA's Next Generation Compliance initiative. EPA is also proposing to require reporting in the following circumstances:

- If the owner or operator is requesting an extension to the 30-day (or 120-day) requirement to complete repairs pursuant to the proposed § 82.157(g);
- If the owner or operator is requesting an extension to complete a retrofit or retirement of an appliance pursuant to the proposed § 82.157(i); or
- If the owner or operator is excluding purged refrigerants that are destroyed from annual leak rate calculations pursuant to the proposed § 82.157(k).
- If the owner or operator is submitting an extension request to EPA to conduct leak inspections less frequently pursuant to the proposed § 82.157(b)(5).

These proposed records and reports are essential to ensure compliance with section 608 of the CAA. EPA seeks comments on the specific recordkeeping and reporting requirements in § 82.157(l) and (m). EPA also seeks comments on the changes to require electronic reporting and to allow and encourage electronic recordkeeping, so long as it is accessible at each facility regulated by these requirements during an onsite inspection.

G. Proposed Changes to the Standards for Recovery and/or Recycling Equipment in Section 82.158

1. Background

Currently, all ODS refrigerant recovery and/or recycling equipment manufactured or imported on or after November 15, 1993, and used during the maintenance, service, repair, or disposal of appliances must be certified by an approved equipment testing organization to ensure that it meets certain performance standards. These standards may vary for certain equipment intended for use with the disposal of small appliances. These performance standards are currently found in tables 2 and 3 of § 82.158, as well as appendix B1, B2, and C of subpart F. EPA based these standards in large part on ARI (now AHRI) Standard 740–1993 and ARI Standard 740–1995. Recovery and/or recycling equipment intended for use during the maintenance, service, repair, or disposal of MVAC and MVAC-like appliances must meet the standards in subpart B. The regulations in subpart F simply refer to that subpart and state that the such recovery and/or recycling equipment must meet the standards of § 82.36(a).

2. Extension to Substitute Refrigerants

EPA is proposing to require that all recovery and/or recycling equipment used during the maintenance, service, repair, or disposal of appliances, other than MVACs and MVAC-like appliances, that contain non-exempt substitute refrigerants also be certified by an approved equipment testing organization that it meets certain performance standards. EPA is proposing to allow all recovery and/or recycling equipment that met certification requirements for ODS prior to this rulemaking to be certified for non-exempt substitute refrigerants. Since most recovery equipment is already certified for use with non-exempt substitute refrigerants, this proposal would merely update the standards to reflect current practices.

EPA is also proposing to add appendices B3 and B4, based on the AHRI Standard 740–2015, *Performance Rating of Refrigerant Recovery Equipment and Recovery/Recycling Equipment*. All new equipment manufactured or imported on or after the effective date of this rule would be required to meet the standards in appendix B and table 2. The evacuation level would depend upon the saturation pressure of the refrigerant. EPA is also proposing to update appendix C ''Method for Testing Recovery Devices for Use with Small Appliances'' to reference all refrigerants, instead of the currently referenced CFC–12.

Certifying refrigerant recovery and/or recycling equipment for use with non-exempt substitutes serves multiple purposes. First, certification would provide reliable information on the ability of equipment to minimize emissions of these substitute refrigerants, by measuring and/or establishing standards for recovery efficiency (vacuum level) and maximum emissions from air purging, oil draining, equipment clearing, and hose permeation. Second, certification would provide reliable information on the equipment's ability to clear itself when switching between refrigerants. Without sufficient clearing capability, equipment may retain residual refrigerant in its condenser, which would then be mixed with the next batch of refrigerant recovered by the equipment. Because mixed refrigerant can be difficult if not impossible to reclaim (depending on how cross-contaminated the mixed refrigerant is) and expensive to destroy, it is much more likely than unmixed refrigerant to be vented to the atmosphere. Third, certification would provide reliable information on the equipment's recovery speed. Without such information, technicians may purchase equipment that recovers too slowly, tempting them to interrupt recovery before it is complete. As discussed in the 1993 Rule, where EPA established the equipment certification requirements, the information on equipment performance provided by an independent third-party testing organization is more reliable than that provided by other sources, such as equipment manufacturers (58 FR 28686–28687).

Certification of recovery equipment used with non-exempt substitute refrigerants would also maximize recycling and minimize emissions of ODS refrigerants. There is no physical difference between ozone-depleting refrigerants and their fluorocarbon substitutes that would prevent a technician from purchasing and using HFC recovery equipment on CFCs or HCFCs, except in the case of flammable refrigerants.

Because different treatment is warranted for flammable refrigerants, EPA is proposing to add standards for the recovery of flammable non-exempt refrigerants. Currently, EPA is only aware of two flammable non-exempt substitute refrigerants that are approved for use in stationary refrigeration and air-conditioning equipment: HFC–32 and HFO–1234ze(E). However, EPA expects this number to grow in the future. Additionally, EPA notes that the AHRI Standard 740–2015 that is being used as the basis for the recycling and/or recovery equipment requirements in appendix B3 does not apply to flammable refrigerants. To address this, EPA is proposing several options that could be used for flammable non-exempt substitute refrigerants like HFC–32. EPA could require that all recycling and/or recovery equipment used with flammable non-exempt substitute refrigerants must:

—meet a new standard that requires the recovery/recycling performance of appendix B3 (based on AHRI Standard 740–2015) and the safety performance of Underwriters Laboratories (UL) Standard 1963, Supplement SB—*Requirements for Refrigerant Recovery/Recycling Equipment Intended for Use with a Flammable Refrigerant*;

—meet the standards in appendix C (80 percent of the refrigerant must be recovered if the compressor is not functioning; 90 percent of refrigerant must be recovered if the compressor is functioning);

—meet the requirements in a flammable refrigerant recovery standard from another organization like the International Organization for Standardization (ISO), AHRI, or ASHRAE, if available;

—use equipment that is certified for another refrigerant within the same pressure category; or

—recover flammable refrigerants, but without a standard or certification until standards are developed.

Creating an appendix B4 that combines the requirements of appendix B3 with the requirements in Supplement SB of UL 1963 could be the most appropriate option. EPA would incorporate certain aspects of UL 1963 by reference and potentially modify the testing protocol in appendix B3 to account for flammability concerns during testing.

When refrigerants are removed from the appliances, whether destined for reclamation or disposal, they must be managed properly. One of the first steps in proper management is to determine whether or not the refrigerants are a hazardous waste under the Resource Conservation and Recovery Act (RCRA) and its corresponding regulations. It is the facility's responsibility to make this waste identification. Under the regulations, a facility may either test the waste or use knowledge to make this determination. If the material is determined to be a hazardous waste, then the facility is a hazardous waste generator and is subject to the generator regulations at 40 CFR part 261.5 or 40 CFR part 262, depending on the amount of hazardous waste generated in a month. For details on the Federal generator regulations, see *http://www2.epa.gov/hwgenerators*. Some spent alternative refrigerants such as HFC–32 most likely exhibit the hazardous waste characteristic of ignitability. This would also likely hold true for some exempt substitute refrigerants, like propane and isobutane.

In the case of household appliances, repair and disposal of hydrocarbon refrigerant would not be considered hazardous waste management because the appliance is exempt under the household hazardous waste exemption at 40 CFR 261.4(b)(1) (although States may have more stringent regulations). However, a facility must be careful not to mix the household hazardous waste with regulated hazardous waste in order for the household appliances to remain exempt.

Certifying recovery and/or recycling equipment used with substitute refrigerants is important to further implementing section 608(c)(2) and 608(a). In particular, the proposed revisions would make clear that proper use of certified equipment would be considered a good faith effort to recapture and recycle or safely dispose of non-exempt substitute refrigerants when maintaining, servicing, repairing, or disposing of an appliance, in order to comply with the prohibition on venting of substitute refrigerants. Part of making a good faith effort to recover such refrigerants involves using equipment that minimizes emissions of substitute refrigerants and prevents the mixture of substitute refrigerants and ODS refrigerants during the recovery and recycling process. It also involves using equipment that recovers refrigerant quickly enough that the recovery process can be completed in a reasonable amount of time from a given appliance. Certification of such equipment will help ensure that technicians use equipment that is suited to these goals.

EPA requests comments on whether removing earlier appendices for older equipment and using the updated AHRI standards for newly certified recovery and/or recycling equipment is appropriate. EPA also requests comments on its proposal to require all recovery and/or recycling equipment used on appliances containing substitute refrigerants (with the potential exception of flammable refrigerants) to be certified by an independent third party and on the following questions: What equipment is currently being used on appliances containing substitutes? Would providing a uniform standard for recovery and/or recycling equipment be beneficial to product manufacturers or service technicians? Has mixing of ODS refrigerants and/or substitute refrigerants been a problem using the currently available equipment? Are there any recovery devices suitable for use with flammable non-exempt refrigerants? Are there any other standards that EPA should considers before finalizing recovery standards (*i.e.,* ISO, AHRI, ASHRAE)? EPA also seeks comment on what standards should be used for the recycling and/or recovery of flammable non-exempt refrigerants like HFC–32. Comments should address the safety and efficacy of the various standards and whether the standard would facilitate or deter the use of flammable refrigerants.

3. Clarifications and Edits for Readability

EPA is proposing to reorganize § 82.158 by appliance type. EPA is also proposing to combine tables 2 and 3. Table 2 contains the levels of evacuation that must be achieved by recovery and/or recycling equipment manufactured on or after November 15, 1993, and table 3 contains levels for equipment manufactured before that date. The combined table removes inconsistencies in terminology and formatting.

EPA is also proposing to re-write § 82.158 for clarity the requirements for recovery equipment used on small appliances. In general, the requirement is that the equipment is capable of recovering 90% of the refrigerant in the test stand when the compressor of the test stand is operational and 80% of the refrigerant when the compressor of the test stand is not operational. In addition, there are secondary considerations that could allow for the certification of recovery equipment based on when that equipment was manufactured or imported. EPA's intent was to remove redundancy and not to change the standards when modifying this section.

EPA notes that the existing term is ''operating'' rather than ''operational.'' EPA discusses this proposed change above in section IV.D above where it describes the proposed changes to the evacuation requirements for small appliances.

EPA is also proposing to remove a provision stating that EPA will maintain a list of equipment certified under this section by manufacturer and model. EPA is proposing instead to require that the certified equipment testing organizations publish online a list of equipment that meets EPA requirements. This proposal is discussed in the next section of this notice.

4. Removing the Certification by Owners of Recovery and/or Recycling Equipment

EPA currently requires under § 82.162 that anyone who maintains, services, repairs, or disposes of appliances containing an ODS submit a signed statement to the appropriate EPA Regional office stating that they own recovery and/or recycling equipment and are complying with the applicable requirements of subpart F. EPA is proposing to remove this requirement.

EPA created this provision in 1993 when the Agency first required that recovery and/or recycling equipment be certified and that technicians use certified equipment. At the time, the use and availability of recovery and/or recycling equipment was not as commonplace as it is today. Equipment certification demonstrated to EPA that equipment was available for use by certified technicians. In particular EPA was interested in the capabilities of grandfathered, or pre-1993, equipment. Since certified recovery and/or recycling equipment is commonly available, EPA no longer needs the information contained in the certification statement such as the number of service trucks and personally identifiable information of equipment owners. EPA is therefore proposing to remove this certification requirement. EPA solicits comments on this proposed revision.

H. Proposed Changes for Equipment Testing Organizations in Section 82.160

EPA relies on independent third party organizations approved by the EPA Administrator to certify that refrigerant recovery and/or recycling equipment meets the standards in subpart F. Any equipment testing organization may apply for approval so long as they can verify that they have the expertise and technical capability to verify the performance of the recovery and/or recycling equipment and have no conflict of interest with the equipment manufacturers.

EPA is proposing to make only a few substantive changes to these regulations. First and foremost, a certifying organization must have expertise to certify any new equipment affected by this proposed rule. Thus, an organization must be capable of certifying equipment that is used to recover or recycle HFCs and other substitute refrigerants. EPA is proposing to allow equipment certifying organizations that have already been approved by EPA to continue certifying equipment without need to re-apply. Organizations that are currently certified have sufficient expertise because the same expertise is needed to test equipment used on ODS and substitute refrigerants.

EPA is also proposing changes that would reduce the reporting burden for these entities. EPA currently requires a list of all certified equipment to be submitted to EPA within 30 days of the organization's approval by EPA and annually at the end of each calendar year thereafter. EPA is proposing to remove those requirements. EPA is proposing instead to require that the certified equipment testing organizations publish online a list of equipment that meets EPA requirements. This list would include the manufacturer and the name and/or serial number of a newly certified model line, which is the information that the certifying organizations must currently provide to EPA. This list must be updated no less than once per year, but an organization can choose to update the list more frequently. Making the information available online will be no more burdensome for the testing organization than submitting the list to EPA. Online publication is also a better method of communicating these findings to the public than sending the information to EPA.

EPA is also encouraging the use of electronic reporting and has established the email address *608reports@epa.gov* to receive applications from organizations seeking to be approved under this section and notifications that a previously certified model fails to meet the standards upon retesting. EPA is also proposing to remove language in the regulation stating that applications must include written information.

EPA requests comments on its proposal not to require equipment certification companies to reapply for approval so as to be able to certify equipment used with substitute refrigerants. EPA also requests comments on the proposal to remove the existing reporting requirements and instead require that certifying organizations publish lists of certified equipment online.

I. Proposed Changes to the Technician Certification Requirements in Section 82.161

1. Background

The regulations at § 82.161 currently require the certification of all individuals who service air-conditioning and refrigeration equipment containing an ODS, other than MVACs, which are addressed separately. This group includes installers, contractor employees, in-house service personnel, and anyone else who performs installation, service, maintenance, or repair that might reasonably have the opportunity to release ODS refrigerants to the environment. In addition, individuals disposing of air-conditioning and refrigeration equipment other than small appliances, MVACs, and MVAC-like appliances must be certified.

Technicians become certified by passing a test containing questions drawn from a bank developed jointly by EPA and industry educational organizations with a certification program approved by EPA. The test includes questions on the role of CFCs and HCFCs in ozone depletion, the requirements of the refrigerant recycling rule, and proper techniques for recycling and conserving refrigerant. EPA makes the question bank available to certifying organizations that demonstrate that they can properly generate, track, and grade tests; issue certificates; and keep records.

2. Extension to Substitute Refrigerants

EPA is proposing to extend the certification requirements for technicians who work with ODS refrigerants to technicians who work with non-exempt substitute refrigerants. Requiring certification of technicians who work with non-exempt substitute refrigerants is important to effectively implement and enforce both section 608(c) and section 608(a)(2).

As discussed above, section 608(c) prohibits the knowing release of substitute refrigerants during the service, maintenance, repair, or disposal of appliances, except for *de minimis* releases associated with ''good faith attempts to recapture and recycle or safely dispose'' of the refrigerants. Acts performed by an individual who has become a certified technician that comply with the applicable regulatory requirements would be defined as ''good faith attempts to recapture and recycle or safely dispose'' and thus any associated releases would qualify as *de minimis*. This interpretation is consistent with EPA's interpretation of the same statutory language as it applies to ozone-depleting refrigerants.

The technician certification program is one of the key elements in ensuring the proper recapture and recycling of refrigerant. As stated in the 1993 Rule establishing the program, a technician certification program increases the probability that technicians receive adequate training concerning the requirements of subpart F and the proper operation of recycling equipment, leading to reduced emissions through increased regulatory compliance. Certification does not prevent the violation of the venting prohibition, but it improves the likelihood of compliance through greater awareness. Certification also enhances EPA's ability to enforce against intentional noncompliance by allowing the Agency to revoke the technician's certification under the procedure in § 82.169. Finally, certification increases fairness by seeking to ensure that all technicians are complying with the provisions of subpart F.

Persons who are not certified technicians are far more likely to intentionally or inadvertently release refrigerant. Certified technicians are much more likely to understand how and why to recover and recycle refrigerants and to have the proper equipment to do so. Technician certification helps ensure that technicians are knowledgeable in refrigerant recovery requirements and techniques. The existing regulations do not specifically prohibit an untrained individual from opening an air conditioner containing a substitute refrigerant to add a substitute refrigerant (or potentially even an ODS refrigerant, assuming a certified technician purchased the ODS refrigerant) or replace components. While the venting prohibition still applies, the individual may not even be aware that there is a prohibition against venting refrigerant. Tips reported to the Agency indicate this occurs. Requiring that anyone opening an appliance be a certified technician will reduce emissions caused by uninformed service personnel and will facilitate enforcement of the venting prohibition, especially when coupled with the proposed recordkeeping requirement discussed in section IV.D.3 of this notice.

Based on stakeholder input prior to this proposal, EPA is aware that many companies require certification of their technicians regardless of the type of refrigerant being used. The principles of proper handling, recovery, and disposal of non-exempt substitute refrigerants are similar if not identical to those for ODS refrigerants, except that additional safeguards are advisable for flammable refrigerants. The fact that some individuals may be working on non-ODS appliances without certification and without following safe handling practices places those most likely to minimize emissions at a disadvantage. One goal of this rulemaking is to incentivize the proper practices or at least remove disincentives to compliance and to environmental protection. EPA is therefore proposing to require certification for anyone working on an appliance where there is a reasonable expectation that an ODS or non-exempt substitute refrigerant will be released into the environment in the course of that work.

The mechanism by which EPA is extending the technician certification requirement to appliances containing non-exempt substitute refrigerants is through the amended definition of the terms *refrigerant* and *appliance.* As discussed in the definition section, EPA is proposing to update the term appliance to include substitutes in addition to class I and class II substances. EPA is not proposing any changes to the regulatory text in § 82.161 to effectuate this proposal.

EPA notes that this proposal would not extend the technician certification requirement to individuals servicing or disposing of appliances containing refrigerants that are exempt from the venting prohibition. However, expanding the certification program to cover those working on equipment containing non-exempt substitutes could decrease the likelihood of untrained technicians working with equipment containing any type of refrigerant, including hydrocarbons. Therefore, individuals would not need to be certified under section 608 of the CAA to work on hydrocarbons in those specific end-uses and appliances approved under SNAP. EPA discusses whether the agency should initiate a rulemaking in future to require certification of technicians using exempt substitutes in Section VI of this preamble.

Consistent with the discussion in Section III above, requiring certification for technicians who work with substitute refrigerants is also necessary to implement the section 608(a) requirements for EPA to promulgate regulations that reduce emissions of class I and II refrigerants to the lowest achievable levels and maximize recapture and recycling of such substances. Technician certification requirements for handling substitute refrigerants would directly reduce some releases of class I and II refrigerants. It would also protect against refrigerant mixture, which otherwise is likely to cause additional releases of class I and II refrigerants.

Failure to require technician certification may lead to increased emissions and reduced recycling of ozone-depleting substances, especially if the person who is violating the refrigerant circuit is not aware of refrigerant recovery requirements and best practices. Uncertified technicians working primarily with HFCs or other substitutes may overlook the restrictions on their ability to work with ozone-depleting refrigerants. Because of the absence of a certification requirement for substitute refrigerants they might be unaware of the existence or scope of the restrictions. Thus, they might fail to recover or recycle class I and class II refrigerants properly, if at all.

Uncertified technicians are currently able to purchase HFC and other substitute refrigerants which they could end up using to retrofit appliances containing ozone-depleting substances. Such uncertified technicians may be more likely to vent the ozone-depleting substance prior to retrofitting, given their probable lack of knowledge and the fact that return of the substance to a reclaimer would reveal that they were handling it illegally. Failure to require technician certification to work with substitute refrigerants is also likely to encourage the inappropriate mixture of substitute and ozone-depleting refrigerants. In this scenario, refrigerant mixture could occur because uncertified technicians might wish to service CFC or HCFC equipment, but would have access only to HFCs due to the sales restriction on ODS refrigerants. Lacking proper education or knowledge, these technicians would probably have a poor understanding of the consequences of mixing refrigerants, and would therefore be more likely than certified technicians to add HFCs to CFC or HCFC systems.

The consequences of such inappropriate mixture include significant losses in performance and energy efficiency in equipment serviced with mixed refrigerants, damage to equipment, the lost value of the mixed refrigerant (which is at best difficult, and often impossible, to separate into the component refrigerants), and costs for destroying mixed refrigerants. Refrigerant mixture also leads both directly and indirectly to refrigerant release. Mixture leads directly to release because mixtures of certain refrigerants, such as R–22 and R–134a, have higher pressures than either component alone. Thus, pressure-sensitive components such as air purge devices on recycling machines and relief devices on appliances may be activated by these mixtures, venting the refrigerant to the atmosphere. Purge devices in particular are often set to open when the pressure of the recovery cylinder's contents rises more than 5–10 psi above the expected saturation pressure for the refrigerant; this margin is exceeded by R–22/R–134a mixtures containing more than ten percent of the contaminating refrigerant.

Refrigerant mixture also reduces recycling and leads indirectly to release. First, mixed refrigerants not only lose their value but cost money to reclaim or destroy, which could provide a financial incentive for illegal venting. Second, the direct releases and equipment breakdowns caused by contamination lead to increased equipment servicing, which itself leads to unavoidable releases of refrigerant. Thus, failure to impose a certification requirement on persons working with substitute refrigerants would increase the probability of both substitute and ozone-depleting refrigerants being emitted to the atmosphere.

For these reasons, EPA is proposing a technician certification requirement for persons working with non-exempt substitutes in order to further implement sections 608(a) and 608(c), using the authority under these sections. EPA requests comments on the likelihood that failure to impose a technician certification requirement on persons working with HFCs and other substitutes would lead to release and mixture of both ozone-depleting refrigerants and substitutes.

3. Updated Test Bank

EPA is planning to update the technician certification test bank with more questions on handling substitutes, including flammable substitute refrigerants, and on the impacts of climate change. While this is not a regulatory change—the Agency can update the test bank when appropriate without promulgating a new regulation—it aligns with EPA's proposal to extend the refrigerant management regulations to substitute refrigerants. Currently, the questions focus on CFCs and HCFCs, even though CFCs have been phased out for nearly twenty years and the predominant HCFC, HCFC–22, will be phased out by 2020.

EPA has begun reviewing the test bank and consulting with certification and training organizations to identify questions that should be updated, replaced, or removed, with an eye toward questions on the proper handling and recovery of HFCs and other substitute refrigerants. The updated test bank will incorporate new and revised elements of the National Recycling and Emission Reduction Program that are being proposed in this action, once finalized. For this reason, EPA is waiting to update the test bank until after this rule is finalized.

EPA intends to use a similar process to the one used when initially creating the test bank. EPA will work with industry and trade associations to develop and evaluate new questions as well as remove or update questions that may be out of date. EPA invites participation from the regulated community in this process.

J. Proposed Changes to the Technician Certification Program Requirements in Section 82.161

1. Background

The current regulations at § 82.161 require that organizations operating technician certification programs must apply to EPA to have their programs approved. The application process ensures that technician certification programs meet minimum standards for generating, tracking, and grading tests as well as keeping records. Approved technician certification programs must keep records of the names of technicians they have certified and the unique numbers assigned to each technician certified through their programs. These records allow both the Agency and the certification program to verify certification claims and to monitor the certification process. Approved technician certification programs also must submit reports to EPA every six months containing the pass/fail rate and testing schedules. Such reports allow the Agency to evaluate certification programs and modify certification requirements if necessary.

2. Extension to Substitute Refrigerants

EPA is proposing to require that technicians who work with non-exempt substitute refrigerants be certified. By extension, EPA is proposing to require that technician certification programs offer tests for those technicians. This should not require significant changes to current practices other than using the updated test bank and the changes discussed below. EPA is not proposing as a lead option to require certification programs to recertify based on this or any other proposed changes in this rule, but seeks comments on whether such recertification requirements would be appropriate.

3. Technician Database

In developing this proposed rule, EPA asked technician certification programs whether the Agency should establish a national database of certified technicians. EPA considered creating a database to reduce the burden currently facing the Agency and technician certification programs in assisting technicians who have lost their certification cards. EPA receives on average five inquiries a day from technicians who are seeking a copy of their card. EPA does not maintain records of who has been certified; this is currently the responsibility of the certification programs. EPA can only direct technicians to a list of the approved certification programs on the Agency's Web site, but in some cases the technician does not remember the name of the program that issued their card. EPA is aware that many certification programs also get numerous inquiries from technicians.

Establishing a publicly searchable database would help technicians find replacement certification cards. Certification programs themselves are generally better suited to maintain such information. Currently, certification programs must maintain records of the names and addresses of all individuals taking the tests, as well as the scores, dates, and locations of all administered tests. A publicly-available database that contains components of these records should be sufficient for a technician to locate themselves. EPA is proposing that this database, which could be as simple as a list, contain the first name, middle initial, and last name of the certified technician, the technician's city of residence when taking the test, the type(s) of certification received, and the date each certification test was completed. EPA is proposing to exempt Federal government-run programs from this requirement because the public release of government and military personnel names linking them to their Federal employment could present significant privacy and security concerns, especially for military and other government personnel who may be based, deployed, or traveling to hostile regions throughout the world.

Because this database is primarily for the benefit of the technician, EPA is offering the option for the technician to opt out. The technician certification program must therefore provide notice to technicians that they will be included in that database and give technicians the ability to opt out. EPA seeks comment on whether technicians should be allowed to opt out.

EPA is not proposing to require that certification programs list everyone currently in their records. While this may assist current technicians who have lost their cards, listing the hundreds of thousands of technicians certified over the last twenty-two years could be overly burdensome. This would also not provide technicians with the opportunity to opt out. Therefore, EPA is proposing that the certification programs only be required to include technicians certified after the effective date of a rule finalizing this proposal. EPA would encourage certification programs to work with technicians they have previously certified to see if they could be added to an online database or list.

EPA is not proposing to require any specific format for providing this database or list. EPA is aware that some certifying organizations already provide this information online to their technicians and the Agency does not intend to require that they change how they offer the information so long as the required data elements are included.

An online database or list of certified technicians can also assist refrigerant wholesalers to enforce the sales restriction. For example, if a vendor has any doubt about a new customer, they could confirm that the technician is certified by comparing the customer's ID with the information online. The online information can also be printed and maintained as a record by the vendor.

EPA invites comments on the proposal to require certifying organizations to publish and maintain an online searchable database or list of technicians they certify going forward. EPA requests comments on whether such databases could be useful to technicians and refrigerant wholesalers while allowing for preservation of technicians' privacy as afforded by the Privacy Act. EPA also seeks comment on whether it should allow technicians to opt out of being included on a public list.

4. Grandfathering Provisions

EPA is proposing to remove provisions related to voluntary certification programs at § 82.161(g). This program was created to allow technicians who were trained prior to the establishment of approved technician certification programs to be recognized as certified technicians. In order to have their voluntary programs considered for approval, applications both for approval as a technician certification program and for approval as a voluntary program were due in 1994. EPA is proposing to remove this provision because it is expired and no longer necessary.

5. Certification Cards

EPA is proposing to change the required text that is printed on certification cards. Currently, the card states that ''[Name of person] has been certified as a [Type I, Type II, Type III, and/or Universal, as appropriate] technician as required by 40 CFR part 82, subpart F.'' Some organizations believe that the language used on the certification card implies that a technician as defined in subpart F may be trained in other aspects of equipment installation.

The primary purpose of the 608 certification card is for a technician to prove to a vendor that they understand the environmental impacts of mishandling refrigerants. While this certification also grants an individual the right to maintain, service, repair, or dispose of appliances, the 608 exam is less focused on the operational and engineering aspects of refrigeration and air-conditioning equipment.

EPA is proposing to amend the language found on the certification card to more accurately reflect the knowledge needed to obtain the certification. Therefore, EPA is proposing that the card read ''[Name of person] has successfully passed a [Type I, Type II, Type III, and/or Universal, as appropriate] exam on how to responsibly handle refrigerants as required by EPA's National Recycling and Emission Reduction Program.'' EPA stated in the 1993 Rule establishing the Technician Certification requirements that standardized language will decrease administrative costs and aid in enforcement. In addition it would ease burden on refrigerant wholesalers who must inspect the cards to verify the certification of technicians. Updating the information on the certification card should not result in any new administrative costs or generate confusion.

The requirements for certification cards appears in both § 82.161 and appendix D. EPA is proposing to remove the redundant requirement from § 82.161 and make the updates proposed in this section to appendix D, as descried in more detail below.

6. Updates to Appendix D

EPA is proposing minor edits to appendix D ''Standards for Becoming a Certifying Program for Technicians.'' EPA is proposing that the description of test contents includes the environmental impact of not just ODS but also substitute refrigerants. EPA is also proposing to remove outdated, redundant, or self-explanatory provisions. This includes removing paragraphs (i) through (k) on approval process, grandfathering, and sample application. EPA is proposing to remove the reference that EPA will periodically publish information on the fees charged by the programs as the Agency no longer collects this information. To protect the private information of technicians and minimize the potential for fraud, EPA is also proposing to remove social security numbers as an acceptable form of identification for Type I technicians using the mail-in format and state that social security numbers cannot be used in the unique certification number assigned to newly-certified technicians. EPA is also proposing clarifying changes and other small changes, including changing the reporting deadline from June 30 of each year to July 30 of each year.

Finally, to help technicians better identify who certified them, EPA is also proposing to require that certifying organizations provide a hand-out or electronic communication to technicians after they have taken the test explaining who provided the training, who to contact with questions, and when they should expect to receive their score, and if they passed, their certification cards. EPA requests comments on the proposed revisions to appendix D.

7. Edits To Improve Readability

EPA is proposing to make minor edits to improve the readability of this section. Notably, EPA is proposing to divide the requirements into two sections. The first would be provisions related to responsibilities of technicians and the second would be provisions related to technician certification programs. It is not EPA's intent to place new requirements on either party through this reorganization of content.

EPA also considered proposing to incorporate the provisions of appendix D into § 82.161 itself and removing appendix D in its entirety but is not proposing to do so at this time. EPA invites comments on the revised language.

K. Proposed Changes to the Reclamation Requirements in Section 82.164

1. Background

The regulations at § 82.164 currently require that anyone reclaiming used ODS refrigerant for sale to a new owner, except for people properly certified under subpart F prior to May 11, 2004, is required to reprocess refrigerant to standards laid out in appendix A (based on ARI Standard 700–1995, *Specification for Fluorocarbons and Other Refrigerants*), release no more than 1.5 percent of the refrigerant during the reclamation process, dispose of wastes from the reclamation process in accordance with all applicable laws and regulations, and adhere to specific recordkeeping and reporting requirements.

2. Extension to Additional Substitute Refrigerants

EPA is proposing to extend the reclamation standards for refrigerants in appendix A to additional non-ozone-depleting substitutes. Most of the refrigerants addressed in appendix A are single component ODS refrigerants or a blend containing an ODS component, with a few exceptions such as R–407C and R–410A. It is appropriate to update this 1995 standard to ensure that refrigerants developed in the last twenty years are reclaimed properly. While standards have been developed for these new refrigerants, reclaimers may not have to achieve such standards without that standard being incorporated into the subpart F regulations.

In a recent proposed rule to issue allowances for the production and import of HCFCs, EPA sought comments on referencing AHRI Standard 700–2012 *Specification for Fluorocarbon Refrigerants* directly, a practice known as incorporation by reference, rather than reproducing the standard in appendix A (78 FR 78095; December 24, 2013). EPA noted at the time that incorporation by reference, and deletion of the text in appendix A, has several advantages. AHRI standards are published, widely known to and used by the persons affected by this regulation, and available free of charge online at *www.ahrinet.org/standards.aspx.* Referencing the AHRI standard, in lieu of duplicating it in appendix A, would reduce potential confusion about the relationship between the two sets of requirements. On the other hand, EPA recognizes that there is an advantage to including the requirements of the standard in an appendix to the regulation, avoiding the need to search for the specific version of the AHRI standard referenced, and providing certainty that compliance with appendix A (although possibly outdated) constitutes compliance with EPA regulations.

In response to EPA's proposal, five commenters supported using the updated testing procedures and protocols, while six commented that the newer halogenated unsaturated volatile impurities limit of 40 ppm by weight (0.004% by wt), as compared to the previous limit of 0.5% by weight, created undue expense and difficulty for reclaimers to achieve. Those commenters noted that ASHRAE and AHRI were still conducting further studies on the unsaturates limit. In the final rule issuing HCFC allowances, EPA did not incorporate AHRI 700–2012 by reference, noting concerns about the unsaturates limit and the ongoing unsaturates study (79 FR 64281; October 28, 2014).

At this time, recognizing that the unsaturates study has not been finalized, EPA is proposing to update appendix A to include HFCs, PFCs, HFOs, and other refrigerants based on the standards contained in AHRI Standard 700–2015, *Specifications for Refrigerants,* while keeping the unsaturates limit to be 0.5% by weight. If the unsaturates study is published before this final rule is issued, EPA would consider incorporating the full standard by reference.

EPA seeks comments on whether the updated standard, AHRI Standard 700–2015 *Specifications for Refrigerants,* along with Appendix C to AHRI–700 2015, should be directly incorporated by reference, or whether appendix A should be updated to include HFCs, PFCs, HFOs, and other refrigerants based on the 2015 version of the AHRI 700 standard, including the appendix. EPA also seeks comment on whether the agency needs to keep section 5.3.2 titled ''Alternative Method'' in Appendix A to subpart F.

3. Changes to Recordkeeping and Reporting

Under the current regulations at § 82.164(b), reclaimers must certify that the refrigerant reclaimed meets the specifications in AHRI Standard 700–1995 using the analytical methodology prescribed in appendix A. In addition to updating the standard to AHRI Standard 700–2015, EPA is proposing to clarify that the analysis must be conducted on each batch of refrigerant being reclaimed. EPA is also proposing to require that reclaimers maintain records of these analyses. Requiring reclaimers to maintain records helps to ensure that refrigerant is being reclaimed to the appropriate specifications. Reclaimers currently analyze by batch, and already generate records when doing so, so these proposed changes update the regulations to reflect current practices and clarify the existing requirements for ODS, and do not add additional burden.

EPA is also proposing to specify that all recordkeeping and reporting requirements for reclaimers be maintained by refrigerant type (*i.e.* ASHRAE number), as information kept in this format will provide more clarity on the types and quantities of refrigerants being reclaimed when aggregated information is reported. EPA is also clarifying what aggregate information must be reported annually to the Agency, and removing a redundant recordkeeping provision related to that report.

EPA requests comments on these proposed changes to the recordkeeping and reporting provisions.

4. Clarifications and Edits for Readability

EPA is proposing to consolidate provisions related to refrigerant reclaimers into a single section. Specifically, EPA is proposing to move prohibitions found in § 82.154(i) and recordkeeping and reporting requirements found in § 82.166(g) and (h) into § 82.164. This proposal also clarifies what is required of the reclaimer. The current regulation requires a reclaimer to certify that he or she will meet a certain set of standards and engage in certain behaviors. The revised regulation requires first that a reclaimer meet those standards and behaviors and second that they certify to having done so. EPA is making this change to improve the enforceability of these provisions. None of these underlying requirements themselves would change, other than the updated AHRI standard and that the clarification that the analysis be conducted on each batch of refrigerant, as discussed above.

L. Proposed Changes to the Recordkeeping and Reporting Requirements in Section 82.166

1. Background

The current regulations include all recordkeeping and reporting provisions in one section of subpart F (§ 82.166). While having all the provisions in one place is useful, the individual pieces are separated from the required practices that the records/reports are intended to help enforce. This can create confusion for the regulated community when they are trying to understand what they must do and what records they must keep to remain in compliance with the section 608 requirements. This is especially true when a recordkeeping or reporting provision directly references a requirement in another section of subpart F. To improve the readability and clarity of the recordkeeping and reporting provisions, EPA is proposing to move the requirements that are currently in § 82.166 to the relevant section describing the required practices. For example, EPA is proposing to move the amended recordkeeping and reporting requirements for Appliance Maintenance and Leak Repair to the section where those required practices are listed, specifically § 82.157. This should allow the regulated community to more easily align the required practices with their recordkeeping/reporting obligations without having to reference requirements in other sections. EPA summarizes the amended recordkeeping and reporting provisions below. EPA is also proposing a new recordkeeping and reporting requirement for anyone disposing of appliances with between five and 50 pounds of refrigerant.

2. Summary of Recordkeeping Provisions

EPA has developed numerous recordkeeping requirements to document compliance with the section 608 regulations. A summary of the proposed requirements is included below. Please refer to other sections of this notice to read about the proposed changes to the existing requirements. All of the proposed requirements would apply to all refrigerants unless the refrigerant is exempt from the venting prohibition. Unless otherwise noted, all records must be maintained for at least three years.

• *Disposal of Small Appliances, MVACs, and MVAC-like Appliances:* Persons who take the final step in the disposal process of such appliances must keep a copy of all the signed statements indicating refrigerant was recovered properly. This statement must include the name and address of the person who recovered the refrigerant and the date the refrigerant was recovered. Alternatively, the statement may be a signed contract stating that the supplier will recover any remaining refrigerant from the appliance prior to delivery.

• *Disposal of Appliances Containing Five to 50 Pounds of Refrigerant:* Persons evacuating refrigerant from appliances normally containing five to 50 pounds of refrigerant for purposes of disposal of that appliance must maintain records documenting their company name, location of the equipment, date of recovery, amount and type of refrigerant recovered for each appliance and the quantity and type of refrigerant transferred for reclamation and/or destruction.

• *Leak Inspection:* Owners or operators of appliances normally containing 50 or more pounds of refrigerant must maintain documentation from quarterly or annual leak inspections that includes the date of inspection and the component(s) where leaks were discovered. Alternatively, owners or operators may install an automatic leak detection system and maintain records showing that the system is calibrated annually.

• *Extension Requests to the Periodic Leak Inspection Requirement:* Owners or operators of federally-owned appliances containing 50 or more pounds of refrigerant must maintain copies of extension requests submitted to EPA to conduct leak inspections less frequently until three years after the less frequent leak inspection schedule is no longer being followed.

• *Full Charge:* Owners or operators of appliances normally containing 50 or more pounds of refrigerant must maintain records documenting what the full charge amount is for appliances with 50 or more pounds of refrigerant. The record for the current full charge must be maintained until three years after the appliance is retired.

• *Service Records Provided by Technicians:* Persons adding or removing refrigerant from an appliance normally containing 50 or more pounds of refrigerant must provide the owner or operator with documentation containing the identity and location of the appliance; the date and type of maintenance, service, repair, or disposal performed; the name of the person performing the maintenance, service, repair or disposal; the amount and type of refrigerant added to or removed from the appliance; the full charge of the appliance; and the leak rate and the method used to determine the leak rate (unless disposing of the appliance).

• *Service Records Maintained by Owners and Operators:* The appliance owner or operator must maintain service records provided by technicians and the identification of the owner or operator of the appliance; the full charge of the appliance and the method for how full charge was determined; the original range for the full charge of the appliance, its midpoint, and how the range was determined (if using method 4, as described in § 82.152, for determining full charge); any revisions of the full charge and how they were determined; and the dates such revisions occurred.

• *Verification Tests:* Owners or operators of appliances normally containing 50 or more pounds of refrigerant must maintain records of the dates, types, and results of all initial and follow-up verification tests. Under this proposed rule, this would apply to all types of equipment, not just IPR.

• *Retrofit/Retirement Plans:* Owners or operators of appliances normally containing 50 or more pounds of refrigerant that cannot be repaired must maintain retrofit or retirement plans. The plan must, at a minimum, contain the following information: Identification and location of the appliance; type and full charge of the refrigerant used; type and full charge of the refrigerant to which the appliance will be converted, if retrofitted; itemized procedure for converting the appliance to a different refrigerant, including changes required for compatibility with the new substitute, if retrofitted; plan for the disposition of recovered refrigerant; plan for the disposition of the appliance, if retired; and one-year schedule for completion of the appliance retrofit or retirement.

• *Extension Requests to Repair or Retrofit/Retire Appliances:* Owners or operators of appliances normally containing 50 or more pounds of refrigerant must maintain copies of extension requests.

• *Mothballing:* Owners or operators of appliances normally containing 50 or more pounds of refrigerant that mothball an appliance must keep records documenting when the system was mothballed and when they add refrigerant back into the appliance.

• *Purged Refrigerant:* Owners or operators of appliances normally containing 50 or more pounds of refrigerant that exclude purged refrigerant that are destroyed from their leak rate calculation must maintain records to demonstrate that a 98 percent or greater destruction efficiency is met. At a minimum this includes flow rate, quantity or concentration of the refrigerant in the vent stream, and periods of purge flow.

• *Lists of Certified Recovery Equipment and Testing Results:* Organizations that are approved to certify refrigerant recovery and/or recycling equipment must maintain records of equipment testing and performance and a list of equipment that meets EPA requirements. These records must be maintained for three years after the equipment is no longer offered for sale.

• *Proof of Certification for Technicians:* Technicians who have passed the section 608 Type I, II, III or Universal test, must keep a copy of their certification at their place of business. These records must be maintained for three years after a certified individual no longer operates as a technician.

• *Sales Restriction:* Anyone selling ODS or substitute refrigerant must document the name of the purchaser, the date of sale, and the quantity of refrigerant purchased. In instances where the buyer employs a certified technician, the seller must keep the information provided by the buyer that at least one technician is properly certified. Copies of technician certifications must be maintained for at least three years after a technician or person employing a technician stops purchasing refrigerant.

• *Small Cans of Refrigerant for MVAC Servicing:* Anyone manufacturing small cans of refrigerant with a self-sealing valve must maintain records verifying that the self-sealing valves do not leak more than 3.00 grams per year when the self-sealing valve is closed as required in the newly-proposed Appendix E to subpart F. Records must be maintained for three years after a certified product is no longer offered for sale.

• *Technician Certification Programs:* Organizations that certify technicians must maintain records of who they certify, the scores of all certification tests administered, and the dates and locations of all tests administered. These records must be maintained as long as they are in operation, not just for three years.

• *Reclaimers:* Reclaimers must maintain records of the analyses conducted to verify that reclaimed refrigerant meets the necessary specifications. On a transactional basis, reclaimers must maintain records of the names and addresses of persons sending them material for reclamation and the quantity of the material (the combined mass of refrigerant and contaminants) by refrigerant type sent to them for reclamation.

EPA requests comments on the clarity and necessity of these recordkeeping provisions to ensure compliance with the section 608 regulatory requirements.

4. Summary of Reporting Provisions

EPA has also proposed several reporting provisions. Reporting is an important component of the National Recycling and Emission Reduction Program and allows EPA to track compliance with the requirements. In this action, EPA has attempted to propose reporting requirements only when necessary to avoid significantly increasing burden on the regulated community. A summary of the proposed reporting requirements is included below. All of these reporting requirements are new for non-exempt substitute equipment. However, all of the proposed requirements are similar to those that exist currently for ODS equipment. Additionally, EPA has proposed to remove the requirement (1) for technicians to certify to the Administrator that they own certified refrigerant recovery equipment and (2) for programs certifying recovery and/or recycling equipment to report to EPA annually on the equipment they approve. Both of these requirements are no longer needed. Unless the information is claimed as confidential business information or as otherwise noted, all notifications must be submitted electronically to *608reports@epa.gov.* Electronic submission of reports should decrease burden on both EPA and the regulated community.

- *Extensions to the 30-day or 120-day Leak Repair Requirement:* Owners or operators of appliances normally containing 50 or more pounds of refrigerant must notify EPA when seeking an extension of time to complete repairs. The request must include the following information: Identification and address of the facility; the name of the owner or operator of the appliance; the leak rate; the method used to determine the leak rate and full charge; the date a leak rate above the applicable leak rate was discovered; the location of leak(s) to the extent determined to date; any repair work that has been performed thus far, including the date that work was completed; the reasons why more time is needed to complete the repair; and an estimate of when the work will be completed.
- *Extensions to Retrofit or Retire Appliances:* Owners or operators of appliances normally containing 50 or more pounds of refrigerant must notify EPA when seeking an extension of time to complete a retrofit or retirement.
- *Purged Refrigerant:* Owners or operators of appliances normally containing 50 or more pounds of refrigerant that exclude purged refrigerant that are destroyed from their leak rate calculation must provide a one-time report to EPA that includes the identification of the facility and a contact person; a description of the appliance; a description of the methods used to determine the quantity of refrigerant sent for destruction and type of records that are being kept; the frequency of monitoring and data-recording; and a description of the control device, and its destruction efficiency.
- *Extensions to the Periodic Leak Inspection Requirement:* Owners or operators of federally-owned appliances containing 50 or more pounds of refrigerant must submit a request to EPA if they wish to conduct leak inspections less frequently than quarterly or annually (depending on the full charge and type of appliance). The extension request must show that the appliance has a minimal history of leakage, and is remotely located or is otherwise difficult to access for routine maintenance. Additionally, the extension request should explain why automatic leak detection equipment could not be used and what leak inspection schedule would be reasonable given the circumstances (not to be less frequent than one inspection every three years).
- *Requesting Approval to Certify Recovery/Recycling Equipment:* Any organization wishing to certify refrigerant recovery and/or recycling equipment must submit an application to EPA. Applications must include information on the facilities used, the qualifications, experience and procedures used to perform certifications, and that there are no conflicts of interest in certifying equipment.
- *Previously-certified Recovery/Recycling Equipment:* Organizations that are approved to certify refrigerant recovery and/or recycling equipment must inform EPA if subsequent tests indicate a previously-certified recovery and/or recycling device does not meet EPA requirements.
- *Technician Certification Programs:* Any organizations wishing to certify technicians under section 608 must submit an application to EPA describing how they will meet all the required standards in appendix D. Organizations that certify technicians must publish online lists/databases of the people that they certify. Organizations must report to EPA twice a year the pass/fail rate and testing schedules. If a previously-approved technician certifying organization stops certifying technicians for any reason, they must ensure those records are transferred to another certifying program or EPA. Organizations that receive records from a program that no longer offers the certification test must inform EPA within 30 days of receiving these records. The notification must include the name and address of the program to which the records have been transferred.
- *Reclaimer Certification:* Any organization that wishes to reclaim refrigerants must certify to EPA that they will reclaim refrigerants to the required purity standards (based on AHRI Standard 700–2015), verify each batch of refrigerant they sell meets those standards, not release more than 1.5 percent of the refrigerant they receive during the reclamation process, dispose of wastes from the reclamation process in accordance with all applicable laws and regulations, and maintain records as required.
- *Reclaimer Change of Business Information, Location or Contact Information:* If a reclaimer changes address or management, they must notify EPA within 30 days. Since reclaimer certification is not transferable, if ownership changes, the new owner must certify to EPA that they will meet the reclaimer certification requirements.
- *Amounts Reclaimed:* Reclaimers must report annually the aggregate quantity of material sent to them for reclamation (the combined mass of refrigerant and contaminants) by refrigerant type, the mass of each refrigerant reclaimed, and the mass of waste products.

EPA seeks comments on the clarity and necessity of these reporting requirements to ensure compliance with the section 608 regulatory requirements.

M. Proposed Effective and Compliance Dates

EPA is proposing that the final rule become effective on January 1, 2017. However, EPA recognizes that for certain requirements, stakeholders will likely need additional time to comply. The below paragraphs describe the requirements for which EPA is proposing a delayed compliance date and the specific time periods EPA is considering. In addition to those compliance dates discussed below, EPA seeks comments on whether other portions of the revised regulations should have earlier or later compliance dates.

1. Proposed Section 82.154(c)—Sale of Small Cans of Refrigerant for MVAC Servicing

For manufacture and import of small cans of refrigerant for MVAC servicing, EPA is proposing a compliance date of one year from publication of the final rule. EPA is also proposing to allow small cans manufactured and placed into initial inventory or imported before that date to be sold for one additional year. For example, if the rule is published on July 1, 2016, small can manufacturers would have until July 1, 2017, to transition their manufacturing lines to add self-sealing valves. Manufacturers, distributors, and auto parts stores would be able to sell all small cans manufactured and placed into initial inventory or imported prior to July 1, 2017, until July 1, 2018. EPA seeks comments on this proposed implementation timeline.

2. Proposed Section 82.155—Safe Disposal of Small Appliances, MVAC, and MVAC-Like Appliances

For the revisions to the requirements for the recovery of refrigerant prior to disposal/recycling of small appliances, EPA is proposing a compliance date of one year from publication of the final rule. This should provide time for final disposers such as scrap recyclers to learn about the updated requirement, make any adjustments needed to start maintaining records associated with disposal of appliances containing non-exempt substitutes, and to obtain certified recovery equipment for use with non-exempt substitutes.

EPA is not proposing more than one year because (1) EPA is not proposing significant changes to the requirements for the recovery of refrigerant prior to disposal/recycling of small appliances, MVAC, MVAC-like appliances, (2) final disposers/recyclers of these appliances already must in effect recover HFCs and other non-exempt substitutes prior to disposing of an appliance, and (3) the existing recordkeeping systems and practices used by final disposers can be used to implement the safe disposal requirement to appliances containing non-exempt substitutes. EPA seeks comments on this proposed implementation schedule.

3. Proposed Section 82.156—Proper Evacuation of Refrigerant From Appliances

For proposed provisions related to the evacuation of refrigerant before maintenance, servicing, repair, and disposal of appliances, EPA is proposing a compliance date of one year from publication of the final rule. This would provide time for affected entities to learn about the required practices, set up a recordkeeping program to track the amount of refrigerant recovered from appliances that are disposed of in the field, and to obtain certified recovery equipment for use with non-exempt substitutes. EPA seeks comments on this proposed implementation schedule.

4. Proposed Section 82.157—Appliance Maintenance and Leak Repair

EPA is proposing significant revisions to the leak repair provisions, including lowering the applicable leak rate, requiring leak inspections, and modifying the recordkeeping requirements. Because these changes are extensive, EPA is proposing a later compliance date for the appliance maintenance and leak repair requirements than for most other proposed provisions. EPA is proposing a compliance date 18 months from publication of the final rule. This would give owners and operators of appliances with 50 or more pounds of refrigerant time to learn about the updated requirements; update systems, standard operating procedures, and training materials to best implement the requirements; and fix leakier systems prior to the more stringent requirements taking place. EPA could consider a shorter or longer timeframe by approximately six to twelve months (in other words, the compliance dates could be between six months and two and half years after a final rule is published in the **Federal Register**), but would need commenters to provide details on why the shorter or longer timeframe is warranted (*e.g.,* cost, logistics, environmental effects, or other verifiable and compelling rationales). EPA seeks comments on its proposed compliance date for the appliance maintenance and leak repair provisions.

5. Proposed Section 82.161—Technician Certification Requirements

EPA is proposing that the compliance date for the revisions to § 82.161 be one year after publication of a final rule. Providing more time will allow EPA to update the test bank and certifying organizations to update their tests to use the updated questions. EPA does not anticipate that more than one year would be necessary because HVACR contractors are generally working on both ODS refrigerants and non-exempt substitute refrigerants, and there is not likely to be a rush of contractors needing to be certified. EPA is also proposing to require that any person certified as a technician on January 1, 2017, or later be included in a publicly-accessible database of certified technicians. Under the proposed timelines, technician certification programs would have to make this database available starting January 1, 2018. EPA seeks comments on these proposed compliance dates.

6. Sunset Dates for Requirements That Will Be Superseded in Future

For the majority of the requirements in this rule, the new requirements will apply as of the effective date of the rule. For requirements with a delayed compliance date, EPA intends to indicate when those requirements will apply. EPA is proposing to sunset the corresponding existing requirements as of the dates the new requirements apply. EPA seeks comments on other approaches.

V. Economic Analysis

While selecting regulatory actions that would achieve the goals of this proposed rule, EPA considered the costs of different actions to individual entities and the United States economy as a whole. A full description of the cost analyses is included in the technical support document *Analysis of the Economic Impact and Benefits of Proposed Revisions to the National Recycling and Emission Reduction Program,* which can be found in the docket.

To estimate the incremental costs of the proposed regulatory changes, the Agency developed a set of model entities with a distribution of different model facilities, each of which could contain a set of model appliances. This set of model entities was used to represent the potentially affected entities in a variety of economic sectors in the United States, and they were developed based on EPA's Vintaging Model and cross-checked with a large dataset of repair records developed under California's RMP. Each model entity reflects information about the typical number of facilities in a given sector and size category and the number of pieces of equipment in each equipment category that are likely to be owned and/or operated by each facility. By combining the model entities with economic data on potentially affected industries from the United States Census, EPA obtained a model for the potentially affected population. By applying the costs of leak inspections, repairs, recordkeeping and reporting, self-sealing cans for MVAC servicing, and other regulatory changes to this population, EPA estimated the costs to individual entities and the total cost to the economy.

Some proposed regulatory changes in this action, *e.g.* providing extensions to owners or operators of comfort cooling and commercial refrigeration before having to replace leaking appliances, would reduce the cost of compliance to owners of ODS-containing equipment. These reductions were included in the incremental cost of the proposed action.

Based on this analysis, EPA estimates that the total annual cost to comply with the proposed requirements is $63 million (all costs in 2014 dollars); this includes $61 million in cost to owners and operators of equipment using HFCs, and $2 million for those using ODS. Total annualized costs includes new compliance costs of approximately $113 million associated with the proposed rulemaking, less avoided compliance costs of approximately $50 million associated with the proposed removal of some existing regulatory requirements and provision of additional flexibility that are expected to reduce regulatory burden. The distribution of aggregate costs among different economic sectors and among the regulatory changes is detailed in the technical support document.

Some proposed regulatory changes would reduce financial outlays by owners or operators of air-conditioning and refrigeration equipment, for example, by reducing the amount of refrigerant lost to leaks and thus saving equipment owners or operators the cost of purchasing more refrigerant to replace it. For the money saved in refrigerant purchases alone, EPA estimates that affected entities would avoid spending over $52 million due to the proposed regulatory changes. Thus, the compliance costs and refrigerant savings combined are estimated to be $11 million per year. The financial outlay from affected entities would additionally be lower because appliances running with the correct amount of refrigerant are generally more energy efficient to operate and last longer.

The aggregate costs and savings for the economy as a whole given above would not be expected to be distributed evenly across affected entities. For example, owners of equipment containing ODS that leak at a rate less than 5% of their full charge per year might only incur costs for recordkeeping. However, owners of equipment containing HFCs that leak at a rate of 30% of their full charge per year might incur costs of repairing leaks, while also realizing savings due to reduced refrigerant replacement purchases.

Under the Small Business Regulatory Enforcement Fairness Act (SBREFA), Federal agencies must consider the effects regulations may have on small entities. If a rule may have a significant economic impact on a substantial number of small entities (SISNOSE), the Agency would be required to take certain steps to ensure that the interests of small entities were represented in the rulemaking process. To determine if this was necessary, EPA used the model's entity analysis to ascertain the likelihood that the proposed changes would have a SISNOSE. EPA estimates that approximately 140 of the approximately 950,000 affected small businesses could incur costs in excess of 1% of annual sales and that fewer than 80 small businesses could incur costs in excess of 3% of annual sales. These levels are below the thresholds used in other Title VI rulemakings under which it can be presumed that an action will have no SISNOSE. Nevertheless, EPA consulted numerous stakeholders, including small businesses, in the development of this proposed rule.

The full description of the cost analyses, including sensitivity analyses of key assumptions and alternate proposed options, is included in the technical support document *Analysis of the Economic Impact and Benefits of Proposed Revisions to the National Recycling and Emission Reduction Program,* which can be found in the docket for this action. EPA specifically requests comments on all aspects of that analysis.

VI. Possible Future Changes to Subpart F

In addition to the proposals outlined in this notice, EPA is also seeking input on other aspects of the National Recycling and Emission Reduction Program. EPA is not proposing these changes at this time, but specifically solicits comments on whether the ideas have merit and how the potential changes might be implemented in a future rulemaking.

A. Appliance Maintenance and Leak Repair

In meetings with stakeholders prior to the issuance of this proposed rule, EPA discussed the possibility of establishing a voluntary program for supermarkets based on their corporate-wide average leak rate (CWALR) instead of focusing on the leak rate of each individual appliance. The Agency and several stakeholders indicated that there could be value in regulating commercial refrigeration appliances at the corporate level instead of the individual appliance level. Currently, owners and operators of commercial refrigeration equipment must repair leaks on equipment with 50 pounds or more of refrigerant within 30 days if the leak rate is above 35%, and EPA is proposing in this notice to lower this leak rate to 20%. Under a program like this, EPA could relax the existing leak repair requirements for individual commercial refrigeration appliances if a supermarket chain was able to keep their CWALR below a certain level (for example, 15%) for a full calendar year.

Supermarkets would still have to keep records of refrigerant additions and the full charge of each appliance, but they would not be required to follow the other requirements for commercial refrigeration facilities under the amended § 82.157. For example, if an appliance was leaking more than 20%, they would not have to repair it within 30 days so long as their CWALR was below 15% (or some other level) in the previous calendar year. However, they would have to report to EPA annually their total refrigerant additions, their corporate-wide full charge, and the facilities that are included in the full charge. EPA would use this information to determine if their corporate-wide leak rate was below the required level. If it was not, the supermarket chain would have to follow the requirements at § 82.157 for the next calendar year. Supermarkets would still have to comply with the leak repair requirements for comfort cooling appliances.

A program like this could have advantages for both supermarkets and EPA. Supermarkets would have greater flexibility to determine how they would reduce leaks so long as they are achieving an established level of environmental performance. EPA would receive additional data that it could use to better characterize the industry's emissions profile. Additionally, EPA could use the information to better target its enforcement action. This type of program also fits in well with the Agency's Next Generation Compliance initiative as it incentivizes better environmental performance.

While EPA finds this type of program appealing, there are several reasons this idea is not being proposed in this action. First, establishing the universe of stores within the corporate-wide boundary could be difficult if there are multiple chains held by one parent company. At what level should the boundary be drawn? Second, supermarket chains frequently buy and sell stores to other chains, which may be difficult to address when calculating annual leak rates. Would the newly-purchased stores automatically be included in the CWALR or would they be subject to the requirements for individual appliances?

Some stakeholders expressed interest in a program like this if the Agency would agree not to take any enforcement actions against them. However, the Agency would still want to ensure it could bring enforcement action if a supermarket chain was misreporting its CWALR.

Some stakeholders also appreciated that the Agency was considering ways to reduce burden but felt the Agency should not relax recordkeeping requirements that may help a company reduce leaks. Others were disinterested in the program and did not see an incentive to join. EPA considered this feedback, and the possible benefits of the program, and has decided not to propose this option at this time. However, the Agency seeks comments on whether such an idea could be workable and whether it is worth exploring in a future proposed rule. EPA also seeks comments on other ways the Agency could incentivize compliance or performance that exceeds the regulatory requirements as well as ways to reduce burden for companies with low leak rates, while still ensuring compliance.

B. Refrigerant Reclamation

EPA has received suggestions for how the reclaimer program could be strengthened. Some of these suggestions include more stringent certification requirements for reclaimers and third party audits to ensure reclamation facilities are following the required practices. Some of these suggestions are in the docket to this rule. These suggestions, combined with the principles of Next Generation Compliance, have encouraged EPA to take comment on those two ideas.

EPA is also considering ways to promote the use of reclaimed refrigerant so as to increase the financial incentive to recover and reclaim refrigerant. EPA requests comments on a way to distinguish reclaimed refrigerant from virgin refrigerant. This could potentially include establishing a labeling program for reclaimed material, much like other recycled products.

1. More Stringent Certification Requirements for Reclaimers

EPA has received feedback that the requirements to become a certified reclaimer are not stringent enough. Some have suggested that the Agency require that reclaimers provide more information in their certification on how they will comply with other potentially applicable regulations such as those related to the transport and disposal of hazardous materials. Stakeholders have also suggested that EPA cite compliance with Occupational Health and Safety Administration (OSHA) requirements. EPA seeks comment on whether it should develop more stringent certification requirements in a separate proposed rule, and what those requirements should look like.

Some stakeholders have also suggested that EPA redefine the term reclaim to cover entities other than those historically seen as reclaimers, for example separation facilities. EPA seeks comment on whether the term reclaim should be amended in future to cover separation facilities. EPA also seeks comment on whether the agency should in future require reporting from separation facilities as part of the reclamation program or elsewhere in subpart F to better understand where refrigerant goes after it is recovered. EPA also seeks comment on whether there are other types of facilities that should be covered under a program like this.

2. Establishing a Third Party Certification or Audit Program for Reclaimers

In developing this proposed rule, EPA considered establishing a third party certification program for reclaimers. In addition, one organization has recently urged EPA to require that a third party audit all reclaimers. The specific proposal is included in a letter from Intertek available in the docket. Under a program like this, EPA would certify independent auditors that would review reclaimers' compliance with the section 608 requirements. To reduce costs, EPA could require that in-person site audits occur once every few years. A program like this could help ensure compliance with the section 608 reclamation requirements. While EPA is not proposing this action in today's proposed rule, the Agency seeks comment on the establishment of a third party audit program for reclaimers in a future action.

3. Labeling of Reclaimed Refrigerant

Refrigerant reclaimers and environmental organizations have encouraged EPA to further promote the reclamation of refrigerant. The Agency notes that existing regulations promote HCFC reclamation by requiring refrigerant be recovered rather than vented and that used refrigerant be reclaimed before being sold. Through today's proposal, EPA would be extending that requirement to HFCs and other substitutes, further increasing the supply and types of refrigerants for reclamation. Having said that, the Agency is considering whether labeling could allow for broader recognition, use of, and demand for reclaimed refrigerant.

EPA seeks comments on the value of proposing in a separate rulemaking a voluntary labeling program for reclaimed refrigerant. Under this program, EPA would certify third parties who would then verify that the refrigerant being sold was in fact reclaimed. The reclaimer would have to document receipt of used refrigerant, the amount of that refrigerant that was reclaimed (and not a waste product), and that each batch of reclaimed refrigerant was tested and meets AHRI–700 standards. Alternatively, a program like this could be developed by industry.

There are several situations where reclaimed refrigerant labeled as such could be valuable. First, given the existing restrictions at § 82.15(g) on the manufacture of new appliances using HCFC–22, owners of appliances that expand their system after January 1, 2010, would know that the refrigerant was reclaimed and could be used in compliance with HCFC phaseout requirements.[14] Second, certified reclaimed refrigerant could be marketed to consumers seeking to purchase environmentally preferable products. This type of program could also be useful to Federal, state, or local governments that have directives to purchase recycled content materials by providing verification that the refrigerant they are purchasing is in fact reclaimed.

EPA seeks comments on whether reclaimers, refrigerant wholesalers, or owners or operators of appliances would be interested in such a program. EPA also seeks comments on whether any organization would be interested in becoming a third party verifier for this program. The Agency also seeks comment on what criteria it could establish to ensure refrigerant was in fact reclaimed, and other potential approaches that the Agency could consider if it develops a program like this in future.

C. Safe Disposal of Small Appliances, MVACs, and MVAC-Like Appliances

After conversations with scrap recyclers, EPA considered ways it could improve the requirements for the disposal of small appliances, MVACs, and MVAC-like appliances. While EPA is not proposing any of these changes at this time, EPA is seeking comments on ways that it could ensure refrigerant is

[14] For more information on how EPA treats supermarkets that have remodeled and expanded the capacity of their system, please see *http://epa.gov/ozone/title6/phaseout/Supermarket_Q&A_for_R–22.html.*

recovered from appliances that enter the waste stream with their refrigerant circuit intact, while reducing burden on the final disposer, who is often relying on someone upstream to recover the refrigerant. EPA considered several options to move the recordkeeping requirements upstream, but EPA needs additional feedback before proposing these options.

1. Move Responsibility of Ensuring Proper Recovery to the First Collector

One idea EPA considered was moving the requirement to ensure refrigerant is recovered from the final disposer to the first collector of the appliance. The first collector could include the retailer that delivers a new refrigerator and takes away the old one. The first collector could also include municipal waste collection facilities or others that pick up used appliances from homes, offices, or curbside. Under such a program, the first collector would have to ensure the refrigerant was properly recovered and keep a record documenting that fact. EPA could also create a requirement where the first collector and the final disposer would have to keep a record.

EPA seeks comment on whether this would be an appropriate change to make in future and whether this would improve compliance with the safe disposal requirements (§§ 82.155 and 82.156 as proposed in this notice). EPA also seeks comment on how it could ensure compliance with such a program.

2. Require a Certified Recovery Location for All Appliances

EPA also considered whether to require the establishment of third-party certified appliance recovery centers. These recovery centers would have to be certified by EPA or a third party certifier and would have to document every appliance they receive, the amount of refrigerant recovered from each appliance or each shipment of appliances, and report to EPA on the amount of refrigerant recovered and where that recovered refrigerant was sent for either destruction or reclamation. EPA would also have to require that all small appliances, MVACs, and MVAC-like appliances bound for disposal or recycling would have to be sent to such a certified recovery center. Scrap recyclers, landfills, or other final disposal facilities would only be allowed to receive appliances from certified appliance recovery centers to work effectively.

One advantage to such a program is that scrap recyclers and other final disposers would not have to verify that refrigerant was properly recovered from appliances they receive. EPA would also have more information on how much refrigerant is being recovered from these appliances when they are disposed of. However, EPA has also considered the ongoing transition to lower-GWP alternatives like hydrocarbons, CO_2, and HFO-1234yf in small appliances and MVACs. The benefit of requiring that appliances go through a certified recovery center may decline in the future, and could be potentially disruptive to the existing supply chain today. EPA weighed these factors and has decided not to propose a program like this in today's notice, but is requesting comment on such a program. EPA is particularly interested in whether this type of program would reduce emissions of refrigerants, be easy or difficult to establish and transition to, be difficult to set up in rural areas, and if any organizations would be interested in either becoming a certified appliance refrigerant recovery center or certifying appliance refrigerant recovery centers.

D. Technician Certification

1. Recertification

EPA considered whether to require currently certified technicians to recertify based on the changes proposed in this rule. EPA states at § 82.161(c)(2) that the Administrator reserves the right to specify the need for technician recertification at some future date, if necessary, by placing a notice in the **Federal Register**. At this time, EPA is not proposing that technicians currently certified to work with ODS refrigerants be recertified to work with substitute refrigerants.

In pre-proposal discussions with stakeholders, EPA found both support and opposition to requiring recertification. One argument expressed in favor of recertification is that many changes have occurred in the twenty-two years since the first technicians took the certification exam. For example, many new refrigerants have entered the market, including flammable refrigerants, and air-conditioning and refrigeration equipment has changed.

While more substitutes have been introduced, the techniques for properly handling fluorocarbon substitute refrigerants is very similar to that for ODS refrigerants. As many stakeholders noted at the November 12, 2014, stakeholder meeting, technicians currently handle all refrigerants in a similar manner, regardless of whether they are an ODS or a substitute. EPA's SNAP program has only recently listed a number of flammable refrigerants as acceptable, subject to use conditions, and only in narrow product categories. The benefits of any recertification requirement would probably be small, and would likely be outweighed by the costs of requiring every technician to recertify. EPA requests comments on this approach for currently certified technicians. EPA also seeks comments on the possibility of developing a one-time online recertification that could be more limited in scope than the existing certification test if the Agency did decide to require recertification in future.

2. Flammable Refrigerants

While EPA has not ruled out the possibility of establishing requirements under 40 CFR part 82, subpart F for flammable exempt substitute refrigerants, EPA has not proposed in this rulemaking to extend any of the requirements under section 608, including the technician certification program and the sales restriction, to refrigerants that are exempt from the statutory venting prohibition (CO_2, hydrocarbons in certain SNAP-approved applications, ammonia, etc.). Some in the industry have told EPA that the Agency should require training and certification of HVACR contractors that work with flammable refrigerants. The primary concern is the safety of the technicians working on appliances, the owners and operators of those appliances, and anyone recovering or reclaiming refrigerant from those appliances that may not be labeled properly or mixed with flammable refrigerants.

EPA appreciates the concerns raised by stakeholders about flammable refrigerants and is planning to add questions on this topic to the technician certification test bank when the Agency updates those questions. These questions would cover proper handling practices to prevent mixing with ODS and substitute refrigerants, as well as safety. EPA has also proposed to broaden the definition of substitute so that it covers all refrigerants used by any person as replacements for a class I or II ozone-depleting substance whether or not SNAP-approved. This is to ensure that substitutes found to be unacceptable in a given refrigerant end-use under SNAP will still be covered by the safe handling requirements of subpart F.

EPA is not proposing, however, to extend the sales restriction in today's proposal to hydrocarbon refrigerants for sale in the approved end-uses under SNAP. EPA is also not revisiting in this proposed rule the determination that venting, releasing, or disposing of hydrocarbon refrigerants in the limited end-uses for which is it allowed, does not pose a threat to the environment. EPA also seeks comments on whether the Agency should establish through a future rulemaking a technician certification requirement for flammable refrigerants, or extend the sales restriction (as a way to enforce the certification requirement) or other 608 requirements to flammable refrigerants that are exempt from the venting prohibition. Commenters should provide as much detail as possible, including the requirements that the Agency should establish, and what the environmental benefits might be.

VII. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is a significant regulatory action that was submitted to OMB for review. This action was deemed to raise novel legal or policy issues. Any changes made in response to OMB recommendations have been documented in the docket. EPA prepared an economic analysis of the potential costs and benefits associated with this action. This analysis is summarized in Section V of the preamble and is available in the docket.

B. Paperwork Reduction Act

The information collection activities in this proposed rule have been submitted for approval to OMB under the PRA. The Information Collection Request (ICR) document that EPA prepared has been assigned EPA ICR number 1626.13. You can find a copy of the ICR in the docket for this rule.

All recordkeeping and reporting requirements under this program are specifically described in Section IV.L. of this preamble. In order to facilitate compliance with and enforce the requirements of section 608 of the CAA, EPA requires reporting and recordkeeping requirements of technicians, technician certification programs, refrigerant recovery/recycling equipment testing organizations, refrigerant wholesalers and purchasers, refrigerant reclaimers, refrigeration and air-conditioning equipment owners, and other establishments that perform refrigerant removal, service, or disposal. EPA has used and will continue to use these records and reports to ensure that refrigerant releases are minimized during the recovery, recycling, and reclamation processes. The handling and confidentiality of the reporting requirements follow EPA's confidentiality regulations at 40 CFR 2.201 *et seq.* for assuring computer data security, preventing disclosure, proper storage, and proper disposal.

Respondents/affected entities: Entities required to comply with reporting and recordkeeping requirements include technicians; technician certification programs; refrigerant wholesalers; refrigerant reclaimers; refrigeration and air-conditioning equipment owners and/or operators; and other establishments that perform refrigerant removal, service, or disposal.

Respondent's obligation to respond: Mandatory (40 CFR part 82, subpart F).

Estimated number of respondents: The total number of respondents is estimated to be approximately 1,050,390.

Frequency of response: The frequency of responses vary from once a year to daily. Public reporting burden for this collection of information is estimated to vary from one minute to 9.5 hours per response, including time for reviewing instructions and gathering, maintaining, and submitting information.

Total estimated burden: The total estimated burden is 797,314 hours (per year). Burden is defined at 5 CFR 1320.3(b).

Total estimated cost: The total estimated cost is $35,931,685 (per year). There are no estimated annualized capital or operation & maintenance costs associated with the reporting or recordkeeping requirements.

Most of this burden is already covered by the existing requirements in 40 CFR part 82, subpart F, and the existing ICR, which was last approved by OMB in December 2014.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations in 40 CFR are listed in 40 CFR part 9. The OMB control number for this information collection is 2060–0256.

Submit your comments on the Agency's need for this information, the accuracy of the provided burden estimates and any suggested methods for minimizing respondent burden to Docket ID No. EPA–HQ–OAR–2015–0453. You may also send your ICR-related comments to OMB's Office of Information and Regulatory Affairs via email to *oria_submissions@omb.eop.gov,* Attention: Desk Officer for EPA. Since OMB is required to make a decision concerning the ICR between 30 and 60 days after receipt, OMB must receive comments no later than December 9, 2015. EPA will respond to any ICR-related comments in the final rule.

C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. The small entities subject to the requirements of this action are businesses and small governmental jurisdictions that own or service comfort cooling, commercial refrigeration, or IPR equipment. EPA estimates that approximately 140 of the approximately 950,000 affected small businesses could incur costs in excess of 1% of annual sales and that fewer than 80 small businesses could incur costs in excess of 3% of annual sales. These levels are below the thresholds under which it can be presumed that an action will have no SISNOSE, as used in other Title VI rulemakings. Details of this analysis are presented in the *Analysis of the Economic Impact and Benefits of Proposed Revisions to the National Recycling and Emission Reduction Program* available in the docket to this rule.

D. Unfunded Mandates Reform Act (UMRA)

This action does not contain an unfunded mandate of $100 million or more as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. This rule supplements the statutory self-effectuating prohibition against venting refrigerants by ensuring that certain service practices are conducted that reduce the emissions of ozone-depleting refrigerants and their substitutes. This rule also proposes to strengthen the leak repair requirements, establish recordkeeping requirements for the disposal of appliances containing five to 50 pounds of refrigerant, and modify the technician certification program.

E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This action does not have tribal implications as specified in Executive Order 13175. This rule does not significantly or uniquely affect the communities of Indian tribal governments. This rule supplements the statutory self-effectuating prohibition against venting refrigerants by ensuring that certain service practices are conducted that reduce the emissions of ozone-depleting refrigerants and their substitutes. This rule also proposes to strengthen the leak repair requirements, establish recordkeeping requirements for the disposal of appliances containing five to 50 pounds of refrigerant, and modify the technician certification program. Thus, Executive Order 13175 does not apply to this action.

G. Executive Order 13045: Protection of Children From Environmental Health and Safety Risks

This action is not subject to Executive Order 13045 (62 FR 19885, April 23, 1997) because it is not economically significant as defined in Executive Order 12866. The agency nonetheless has reason to believe that the environmental health or safety risk addressed by this action may have a disproportionate effect on children. Depletion of stratospheric ozone results in greater transmission of the sun's ultraviolet (UV) radiation to the earth's surface. The following studies describe the effects of excessive exposure to UV radiation on children: (1) Westerdahl J, Olsson H, Ingvar C. ''At what age do sunburn episodes play a crucial role for the development of malignant melanoma,'' Eur J Cancer 1994: 30A: 1647–54; (2) Elwood JM Japson J. ''Melanoma and sun exposure: an overview of published studies,'' Int J Cancer 1997; 73:198–203; (3) Armstrong BK, ''Melanoma: childhood or lifelong sun exposure,'' In: Grobb JJ, Stern RS Mackie RM, Weinstock WA, eds. ''Epidemiology, causes and prevention of skin diseases,'' 1st ed. London, England: Blackwell Science, 1997: 63–6; (4) Whiteman D., Green A. ''Melanoma and Sunburn,'' Cancer Causes Control, 1994: 5:564–72; (5) Heenan, PJ. ''Does intermittent sun exposure cause basal cell carcinoma? A case control study in Western Australia,'' Int J Cancer 1995; 60: 489–94; (6) Gallagher, RP, Hill, GB, Bajdik, CD, et al. ''Sunlight exposure, pigmentary factors, and risk of nonmelanocytic skin cancer I, Basal cell carcinoma,'' Arch Dermatol 1995; 131: 157–63; (7) Armstrong, DK. ''How sun exposure causes skin cancer: an epidemiological perspective,'' Prevention of Skin Cancer. 2004. 89–116.

H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

This action is not a ''significant energy action'' because it is not likely to have a significant adverse effect on the supply, distribution or use of energy.

I. National Technology Transfer and Advancement Act and 1 CFR Part 51

This action involves technical standards. In some instances, EPA is proposing to adopt a modified version of an industry standard for purposes of this rule; in others, EPA is proposing to incorporate an industry standard by reference exactly as written. First, EPA is proposing that all new recovery and/or recycling equipment used during the maintenance, service, repair, or disposal of appliances manufactured or imported after the effective date of this rule be required to meet the standard based on AHRI Standard 740–2015, *Performance Rating of Refrigerant Recovery Equipment and Recovery/Recycling Equipment.* This standard establishes methods of testing for rating and evaluating the performance of refrigerant recovery equipment and recovery/recycling equipment. The standard is available at *www.ahrinet.org* or by mail at Air-Conditioning, Heating, and Refrigeration Institute (AHRI), 2111 Wilson Blvd., Suite 500, Arlington, VA 22201.

EPA's lead proposal is to include this AHRI Standard with minor modifications in appendix B3. EPA is also proposing to establish in appendix B4 a modified version of the appendix B3 standard that could be used to certify recovery/recycling equipment used to recover/recycle flammable refrigerants. As proposed, the standard in appendix B4 would base the recovery/recycling performance on AHRI 740–2015 and the safety performance standards in UL 1963, Supplement SB, *Requirements for Refrigerant Recovery/Recycling Equipment Intended for Use with a Flammable Refrigerant.* UL 1963, Supplement SB establishes standards for refrigerant recovery and refrigerant recovery/recycling equipment to ensure the equipment can be used safely with flammable refrigerants. The standard is available at *http://www.comm-2000.com* or by writing to Comm 2000, 151 Eastern Avenue, Bensenville, IL 60106.

In addition, EPA is proposing to incorporate by reference many of the standards referenced in appendix B3 and B4, including:

—ASHRAE Terminology, American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. This Web site provides a glossary of technical terms used by ASHRAE and is available at *https://www.ashrae.org/resources—publications/free-resources/ashrae-terminology.*

—UL Standard 1963, *Refrigerant Recovery/Recycling Equipment,* First Edition, 2011, American National Standards Institute/Underwriters Laboratories, Inc. This standard establishes safety requirements for and methods to evaluate refrigerant recovery and refrigerant recovery/recycling equipment. The standard is available at *http://www.comm-2000.com* or by writing to Comm 2000, 151 Eastern Avenue, Bensenville, IL 60106.

—AHRI Standard 110–2012, *Air-Conditioning, Heating and Refrigerating Equipment Nameplate Voltages,* 2012, Air-Conditioning, Heating, and Refrigeration Institute. This standard establishes voltage rating requirements, equipment performance requirements, and conformance conditions for air-conditioning, heating, and refrigerating equipment. The standard is available at *www.ahrinet.org* or by mail at Air-Conditioning, Heating, and Refrigeration Institute (AHRI), 2111 Wilson Boulevard, Suite 500, Arlington, VA 22201.

—International Standard IEC 60038, *IEC Standard Voltages,* 2009, International Electrotechnical Commission.

This standard specifies standard voltage values which are intended to serve as preferential values for the nominal voltage of electrical supply systems, and as reference values for equipment and system design. The standard is available at *www.techstreet.com* or by writing to Techstreet, 6300 Interfirst Drive, Ann Arbor, MI 48108.

EPA seeks comments on the use of these standards, especially whether to incorporate the UL standard by reference into appendix B4 alongside the appendix B3 requirements or whether to establish a standard in appendix B4 that is based on that standard.

Second, reclaimers are required to reprocess refrigerant to standards based on ARI Standard 700–1995, *Specification for Fluorocarbons and Other Refrigerants.* AHRI Standard 700 establishes purity specifications for refrigerants, and to specify the associated methods of testing for acceptability of refrigerants. EPA is proposing to update appendix A to include HFCs, PFCs, HFOs, and other refrigerants based on the standards contained in AHRI Standard 700–2015, *Specifications for Refrigerants,* but not incorporate the full standard by reference because EPA intends to keep the older unsaturates limit. The standard is available at *www.ahrinet.org* or by mail at Air-Conditioning, Heating, and Refrigeration Institute (AHRI), 2111 Wilson Boulevard, Suite 500, Arlington, VA 22201.

EPA is proposing to incorporate by reference the additional standards referenced in AHRI 700–2015. Specifically, EPA is proposing to incorporate by reference the following standards:

—Appendix C to AHRI Standard 700–2015: Analytical Procedures for AHRI Standard 700–2015, Normative, *Specification for Fluorocarbon Refrigerants.* This document establishes definitive test procedures for determining the quality of new, reclaimed and/or repackaged refrigerants in support of the standards established in AHRI–700, and is available at *www.ahrinet.org* or by mail at Air-Conditioning, Heating, and Refrigeration Institute (AHRI), 2111 Wilson Boulevard, Suite 500, Arlington, VA 22201.

—Appendix D Gas Chromatograms for AHRI Standard 700–2015—Informative, *Specification for Fluorocarbon Refrigerants,* 2012, Air-Conditioning, Heating, and Refrigeration Institute. This appendix provides figures for the gas chromatograms used with Appendix C to AHRI Standard 700–2015: Analytical Procedures for AHRI Standard 700–2015, Normative, Specification for Fluorocarbon Refrigerants. The appendix is available at *www.ahrinet.org* or by mail at Air-Conditioning, Heating, and Refrigeration Institute (AHRI), 2111 Wilson Boulevard, Suite 500, Arlington, VA 22201.

—Federal Specification for ''Fluorocarbon Refrigerants,'' BB–F–1421 B, dated March 5, 1982, section 4.4.3. This section of this standard establishes a method to determine the boiling point and boiling point range of a refrigerant. The standard is available in the docket for this rulemaking.

—GPA STD–2177, *Analysis of Natural Gas Liquid Mixtures Containing Nitrogen and Carbon Dioxide by Gas Chromatography,* 2013, Gas Processors Association. This standard establishes methods for analyzing demethanized liquid hydrocarbon streams containing nitrogen/air and carbon dioxide, and purity products such as ethane/propane mix that fall within compositional ranges indicated in the standard. The standard is available at *www.techstreet.com* or by writing to Techstreet, 6300 Interfirst Drive, Ann Arbor, MI 48108.

—ASTM Standard D1296–01–2012, *Standard Test Method for Odor of Volatile Solvents and Diluents,* 2012, ASTM International. This test method covers a comparative procedure for observing the characteristic and residual odors of volatile organic solvents and diluents to determine their odor acceptability in a solvent system. The standard is available at *www.astm.org* or by writing to ASTM, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428–2959.

EPA seeks comments on whether to incorporate the updated standards by reference or whether appendix A should be updated based on AHRI 700–2015 to include HFCs, PFCs, HFOs, and other refrigerants.

Third, EPA is proposing to create in appendix E a standard for self-sealing valves that is based largely on CARB's *Test Procedure for Leaks from Small Containers of Automotive Refrigerant,* TP–503, as amended January 5, 2010. The standard establishes methods for assessing the leak rate from small containers of refrigerant. A copy of this standard is available in the docket and *www.arb.ca.gov/regact/2009/hfc09/hfc09.htm.* EPA requests comment on the use of this CARB standard for self-sealing valves.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

EPA believes this action will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations, because it affects the level of environmental protection equally for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population, including any minority or low-income population. This rule would amend the leak repair requirements for appliances using ozone-depleting substances, which would protect human health and the environment from increased amounts of UV radiation and increased incidence of skin cancer. The effects of exposure to UV radiation and the estimated reduction in emissions of ozone-depleting substances from this proposed rule is contained in section II.D.1 of this preamble.

List of Subjects in 40 CFR Part 82

Environmental protection, Air pollution control, Chemicals, Incorporation by reference, Reporting and recordkeeping requirements.

Dated: October 15, 2015.

Gina McCarthy,

Administrator.

For the reasons set forth in the preamble, EPA proposes to amend 40 CFR part 82 as follows:

PART 82—PROTECTION OF STRATOSPHERIC OZONE

■ 1. The authority citation for part 82 continues to read as follows:

Authority: 42 U.S.C. 7414, 7601, 7671–7671q.

■ 2. Revise § 82.150 to read as follows:

§ 82.150 Purpose and scope.

(a) The purpose of this subpart is to reduce emissions of class I and class II refrigerants and their substitutes to the lowest achievable level by maximizing the recapture and recycling of such refrigerants during the maintenance, service, repair, and disposal of appliances and restricting the sale of refrigerants consisting in whole or in part of a class I or class II ozone-depleting substance or their substitutes in accordance with Title VI of the Clean Air Act.

(b) This subpart applies to any person maintaining, servicing, or repairing appliances. This subpart also applies to persons disposing of appliances, including small appliances and motor vehicle air conditioners. In addition, this subpart applies to refrigerant reclaimers, technician certifying programs, appliance owners and operators, manufacturers of appliances, manufacturers of recovery and/or recycling equipment, approved recovery and/or recycling equipment testing organizations, and persons buying, selling, or offering to sell class I, class II, or substitute refrigerants.

■ 3. Amend § 82.152:

■ a. by adding definitions for ''Class I,'' ''Class II,'' ''Comfort cooling,'' ''Component,'' ''Leak inspection,'' ''Mothball,'' ''Normal operating characteristics and conditions,'' ''Reclaim,'' ''Recover,'' ''Recycle,'' ''Retire,'' ''Retrofit,'' ''Seasonal variance,'' ''Self-sealing valve,'' and ''System receiver.''

■ b. by revising the definitions for ''Appliance,'' ''Apprentice,'' ''Commercial refrigeration,'' ''Custom-built,'' ''Disposal,'' ''Follow-up verification test,'' ''Full charge,'' ''High-pressure appliance,'' ''Industrial process refrigeration,'' ''Industrial process shutdown,'' ''Initial verification test,'' ''Leak rate,'' ''Low-loss fitting,'' ''Low-pressure appliance,'' ''Medium-pressure appliance,'' ''MVAC-like appliance,'' ''One-time expansion device,'' ''Opening an appliance,'' ''Recovery efficiency,'' ''Refrigerant,'' ''Self-contained recovery equipment,'' ''Small appliance,'' ''Substitute,'' ''Technician,'' and ''Very high-pressure appliance.''

■ c. by removing the definitions for ''Critical Component,'' ''Normal operating characteristics or conditions,'' ''Normally containing a quantity of refrigerant,'' ''Reclaim refrigerant,'' ''Recover refrigerant,'' ''Recycle refrigerant,'' ''Suitable replacement refrigerant,'' ''System mothballing,'' and ''Voluntary certification program.''

The revisions and additions to read as follows:

§ 82.152 Definitions.

As used in this subpart, the term:

Appliance means any device which contains and uses a class I or class II substance or substitute as a refrigerant and which is used for household or commercial purposes, including any air conditioner, motor vehicle air conditioner, refrigerator, chiller, or freezer.

Apprentice means any person who is currently registered as an apprentice in maintenance, service, repair, or disposal of appliances with the U.S. Department of Labor's Office of Apprenticeship (or a State Apprenticeship Council recognized by the Office of Apprenticeship). A person may only be an apprentice for two years from the date of first registering with that office.

* * * * *

Class I refers to an ozone-depleting substance that is listed in 40 CFR part 82 subpart A, appendix A.

Class II refers to an ozone-depleting substance that is listed in 40 CFR part 82 subpart A, appendix B.

Comfort cooling means the air-conditioning appliances used to provide cooling in order to control heat and/or humidity in facilities including but not limited to office buildings and commercial buildings. Comfort cooling appliances include building chillers and roof-top self-contained units. They may be used for the comfort of occupants or for climate control to protect equipment within a facility, including but not limited to computer rooms.

Commercial refrigeration means the refrigeration appliances used in the retail food and cold storage warehouse sectors. Retail food includes the refrigeration equipment found in supermarkets, convenience stores, restaurants and other food service establishments. Cold storage includes the refrigeration equipment used to store meat, produce, dairy products, and other perishable goods.

Component means a part of the refrigerant loop within an appliance including, but not limited to, compressors, condensers, evaporators, receivers, and all of its connections and subassemblies.

Custom-built means that the equipment or any of its components cannot be purchased and/or installed without being uniquely designed, fabricated and/or assembled to satisfy a specific set of industrial process conditions.

Disposal means the process leading to and including:

(1) The discharge, deposit, dumping or placing of any discarded appliance into or on any land or water;

(2) The disassembly of any appliance for discharge, deposit, dumping or placing of its discarded component parts into or on any land or water;

(3) The destruction of any appliance such that the refrigerant would be released into the environment if it had not been recovered prior to the destructive activity, or

(4) The disassembly of any appliance for reuse or recycling of its component parts.

Follow-up verification test means those tests that involve checking the repairs to an appliance after a successful initial verification test and after the appliance has returned to normal operating characteristics and conditions to verify that the repairs were successful. Follow-up verification tests include, but are not limited to, the use of soap bubbles, electronic or ultrasonic leak detectors, pressure or vacuum tests, fluorescent dye and black light, infrared or near infrared tests, and handheld gas detection devices.

Full charge means the amount of refrigerant required for normal operating characteristics and conditions of the appliance as determined by using one or a combination of the following four methods:

(1) Use of the equipment manufacturer's determination of the full charge;

(2) Use of appropriate calculations based on component sizes, density of refrigerant, volume of piping, and other relevant considerations;

(3) Use of actual measurements of the amount of refrigerant added to or evacuated from the appliance, including for seasonal variances; and/or

(4) Use of an established range based on the best available data regarding the normal operating characteristics and conditions for the appliance, where the midpoint of the range will serve as the full charge.

High-pressure appliance means an appliance that uses a refrigerant with a liquid phase saturation pressure between 170 psia and 355 psia at 104 °F. Examples include but are not limited to appliances using R–22, R–407A, R–407C, R–410A, and R–502.

Industrial process refrigeration means complex customized appliances that are directly linked to the processes used in, for example, the chemical, pharmaceutical, petrochemical, and manufacturing industries. This sector also includes industrial ice machines, appliances used directly in the generation of electricity, and ice rinks. Where one appliance is used for both industrial process refrigeration and other applications, it will be considered industrial process refrigeration equipment if 50 percent or more of its operating capacity is used for industrial process refrigeration.

Industrial process shutdown means when an industrial process or facility temporarily ceases to operate or manufacture whatever is being produced at that facility.

Initial verification test means those leak tests that are conducted as soon as practicable after the repair is finished to verify that a leak or leaks have been repaired before refrigerant is added back to the appliance.

Leak inspection means the examination of all visible components of an appliance using a calibrated leak detection device, a bubble test, or visual inspection for oil residue in order to determine the presence and location of refrigerant leaks.

Leak rate means the rate at which an appliance is losing refrigerant, measured between refrigerant charges. The leak rate is expressed in terms of the percentage of the appliance's full charge that would be lost over a 12-month period if the current rate of loss were to continue over that period. The rate is calculated using only one of the following methods for all appliances subject to the leak repair requirements located at an operating facility.

(1) Annualizing Method. Step 1. Take the number of pounds of refrigerant added to the appliance to return it to a full charge, whether in one addition or if multiple additions related to same leak, and divide it by the number of pounds of refrigerant the appliance normally contains at full charge;

Step 2. Take the shorter of the number of days that have passed since the last day refrigerant was added or 365 days and divide that number by 365 days;

Step 3. Take the number calculated in Step 1 and divide it by the number calculated in Step 2; and

Step 4. Multiply the number calculated in Step 3 by 100 to calculate a percentage. This method is summarized in the following formula:

$$\text{Leak rate (\% per year)} = \frac{\text{pounds of refrigerant added}}{\text{pounds of refrigerant in full charge}} \times \frac{365\ \textit{days/year}}{\textit{shorter}\text{ of: \# days since refrigerant last added or 365 days}} \times 100\%$$

(2) Rolling Average Method. Step 1. Take the sum of the pounds of refrigerant added to the appliance over the previous 365-day period (or over the period that has passed since the last successful follow-up verification test showing all leaks in the appliance were repaired, if that period is less than one year);

Step 2. Divide the result of Step 1 by the pounds of refrigerant the appliance normally contains at full charge; and

Step 3. Multiply the result of Step 2 by 100 to obtain a percentage. This method is summarized in the following formula:

$$\text{Leak rate (\% per year)} = \frac{\begin{array}{c}\text{pounds of refrigerant added over past 365 days}\\ \text{(or since the last successful follow-up verification test showing all leaks}\\ \text{in the appliance were repaired, if that period is less than one year)}\end{array}}{\text{pounds of refrigerant in full charge}} \times 100\%$$

Low-loss fitting means any device that is intended to establish a connection between hoses, appliances, or recovery and/or recycling machines and that is designed to close automatically or to be closed manually when disconnected, minimizing the release of refrigerant from hoses, appliances, and recovery and/or recycling machines.

Low-pressure appliance means an appliance that uses a refrigerant with a liquid phase saturation pressure below 45 psia at 104 °F. Examples include but are not limited to appliances using R–11, R–123, R–113, and R–245fa.

* * * * *

Medium-pressure appliance means an appliance that uses a refrigerant with a liquid phase saturation pressure between 45 psia and 170 psia at 104 °F. Examples include but are not limited to appliances using R–114, R–124, R–12, R–134a, and R–500.

Mothball means to evacuate refrigerant from an appliance, or the affected isolated section or component of an appliance, to at least atmospheric pressure, and to temporarily shut down that appliance.

* * * * *

MVAC-like appliance means a mechanical vapor compression, open-drive compressor appliance with a full charge of 20 pounds or less of refrigerant used to cool the driver's or passenger's compartment of an off-road motor vehicle. This includes, but is not limited to, the air-conditioning equipment found on agricultural or construction vehicles. This definition is not intended to cover appliances using R–22 refrigerant.

Normal operating characteristics and conditions means appliance operating temperatures, pressures, fluid flows, speeds, and other characteristics, including full charge of the appliance, that would be expected for a given process load and ambient condition during normal operation. Normal operating characteristics and conditions are marked by the absence of atypical conditions affecting the operation of the appliance.

One-time expansion device means an appliance that relies on the release of its refrigerant charge to the environment in order to provide a cooling effect. These are typically single releases but could also include products that are designed to release refrigerant to the environment through multiple individual charges.

Opening an appliance means any maintenance, service, repair, or disposal of an appliance that would release any refrigerant in the appliance to the atmosphere. Connecting and disconnecting hoses and gauges to measure pressures, add refrigerant, or recover refrigerant from the appliance are not considered ''opening an appliance.''

* * * * *

Reclaim means to reprocess recovered refrigerant to all of the specifications in appendix A of this subpart (based on AHRI Standard 700–2015, *Specifications for Refrigerants*) that are applicable to that refrigerant and to verify that the refrigerant meets these specifications using the analytical methodology prescribed in section 5 of appendix A of this subpart.

Recover means to remove refrigerant in any condition from an appliance and to store it in an external container without necessarily testing or processing it in any way.

Recovery efficiency means the percentage of refrigerant in an appliance that is recovered by a piece of recovery and/or recycling equipment.

Recycle, when referring to refrigerant, means to extract refrigerant from an appliance and clean it for reuse in equipment of the same owner without meeting all of the requirements for reclamation. In general, recycled refrigerant is cleaned using oil separation and single or multiple passes through devices, such as replaceable core filter-driers, which reduce moisture, acidity, and particulate matter.

Refrigerant means, for purposes of this subpart, any substance, including blends and mixtures, consisting in part or whole of a class I or class II ozone-depleting substance or substitute that is used for heat transfer purposes and provides a cooling effect.

Refrigerant circuit means the parts of an appliance that are normally connected to each other (or are separated only by internal valves) and are designed to contain refrigerant.

Retire, when referring to an appliance, means the disassembly of the entire appliance including its major components, such that the appliance as a whole cannot be used by any person in the future.

Retrofit means to convert an appliance from one refrigerant to another refrigerant. Retrofitting includes the conversion of the appliance to achieve system compatibility with the new refrigerant and may include, but is not limited to, changes in lubricants, gaskets, filters, driers, valves, o-rings or appliance components.

Seasonal variance means the addition of refrigerant to an appliance due to a change in ambient conditions caused by a change in season, followed by the subsequent removal of an equal amount of refrigerant in the corresponding change in season, where both the addition and removal of refrigerant occurs within one consecutive 12-month period.

Self-contained recovery equipment means refrigerant recovery and/or recycling equipment that is capable of removing the refrigerant from an appliance without the assistance of components contained in the appliance.

Self-sealing valve means a valve affixed to a container of refrigerant that automatically seals when not dispensing refrigerant and meets or exceeds established performance criteria as identified in § 82.154(c)(2).

Small appliance means any appliance that is fully manufactured, charged, and hermetically sealed in a factory with five (5) pounds or less of refrigerant, including, but not limited to, refrigerators and freezers (designed for home, commercial, or consumer use), medical or industrial research refrigeration equipment, room air conditioners (including window air conditioners, portable air conditioners, and packaged terminal air heat pumps), dehumidifiers, under-the-counter ice makers, vending machines, and drinking water coolers.

Substitute means any chemical or product, whether existing or new, that is used as a refrigerant to replace a class I or II ozone-depleting substance.

System-dependent recovery equipment means refrigerant recovery equipment that requires the assistance of components contained in an appliance to remove the refrigerant from the appliance.

System receiver means the isolated portion of the appliance, or a specific vessel within the appliance, that is used to hold the refrigerant charge during the servicing or repair of that appliance.

Technician means any person who in the course of maintenance, service, or repair of an appliance could be reasonably expected to violate the integrity of the refrigerant circuit and therefore release refrigerants into the environment. Technician also means any person who disposes of an appliance that could be reasonably expected to violate the integrity of the refrigerant circuit and therefore release refrigerants from the appliance into the environment, except for persons who only dispose of appliances that are small appliances, MVACs, and MVAC-like appliances. Activities reasonably expected to violate the integrity of the refrigerant circuit include but are not limited to: Attaching and detaching hoses and gauges to and from the appliance; adding or removing refrigerant; adding or removing components; and cutting the refrigerant line. Activities such as painting the appliance, rewiring an external electrical circuit, replacing insulation on a length of pipe, or tightening nuts and bolts are not reasonably expected to violate the integrity of the refrigerant circuit. Activities conducted on appliances that have been properly evacuated pursuant to § 82.156 are not reasonably expected to release refrigerants unless the activity includes adding refrigerant to the appliance. Technicians could include but are not limited to installers, contractor employees, in-house service personnel, and in some cases owners and/or operators of appliances.

Very high-pressure appliance means an appliance that uses a refrigerant with a critical temperature below 104 °F or with a liquid phase saturation pressure above 355 psia at 104 °F. Examples include but are not limited to appliances using R–13, R–23, R–503, R–508A, and R–508B.

■ 4. Revise § 82.154 to read as follows:

§ 82.154 Prohibitions.

(a) *Venting Prohibition.* (1) No person maintaining, servicing, repairing, or disposing of an appliance or industrial process refrigeration may knowingly vent or otherwise release into the environment any refrigerant from such appliances. Notwithstanding any other provision of this subpart, the following substitutes in the following end-uses are exempt from this prohibition and from the requirements of this subpart:

(i) Carbon dioxide in any application;

(ii) Nitrogen in any application;

(iii) Water in any application;

(iv) Ammonia in commercial or industrial process refrigeration or in absorption units;

(v) Chlorine in industrial process refrigeration (processing of chlorine and chlorine compounds);

(vi) Hydrocarbons in industrial process refrigeration (processing of hydrocarbons);

(vii) Ethane (R–170) in very low temperature refrigeration equipment and equipment for non-mechanical heat transfer;

(viii) Propane (R–290) in retail food refrigerators and freezers (stand-alone units only); household refrigerators, freezers, and combination refrigerators and freezers; self-contained room air conditioners for residential and light commercial air-conditioning; heat pumps; and vending machines;

(ix) Isobutane (R–600a) in retail food refrigerators and freezers (stand-alone units only) and vending machines;

(x) R–441A in retail food refrigerators and freezers (stand-alone units only); self-contained room air conditioners for residential and light commercial air-conditioning; heat pumps; and vending machines.

(2) *De minimis* releases associated with good faith attempts to recycle or recover refrigerants are not subject to this prohibition. Refrigerant releases are *de minimis* only if they occur when:

(i) The required practices in § 82.155, § 82.156, and § 82.157 are observed, recovery and/or recycling machines that meet the requirements in § 82.158 are used whenever refrigerant is removed from an appliance, the technician certification provisions in § 82.161 are observed, and the reclamation requirements in § 82.164 are observed; or

(ii) The requirements in subpart B of this part are observed.

(3) The knowing release of a refrigerant after its recovery from an appliance is a violation of the venting prohibition.

(b) No person may maintain, service, repair, or dispose of an appliance without:

(1) Observing the required practices in § 82.155, § 82.156, and § 82.157; and

(2) Using recovery and/or recycling equipment that is certified for that type of refrigerant and appliance under § 82.158.

(c) *Sales Restriction.* (1) No person may sell or distribute, or offer for sale or distribution, any substance that consists in whole or in part of a class I or class II substance or substitute for use as a refrigerant unless:

(i) The buyer has been certified as a Type I, Type II, Type III, or Universal technician under § 82.161;

(ii) The buyer employs at least one technician who is certified as a Type I, Type II, Type III, or Universal technician under § 82.161 and provides proof of such to the seller;

(iii) The buyer has been certified in accordance with 40 CFR part 82, subpart B and the refrigerant is acceptable for use in MVACs under 40 CFR part 82, subpart G;

(iv) The buyer employs at least one technician who is certified under 40 CFR part 82, subpart B, and provides proof of such to the seller and the refrigerant is acceptable for use in MVACs under 40 CFR part 82, subpart G. Nothing in this provision relieves persons of the requirements of § 82.34(b) or § 82.42(b);

(v) The refrigerant is sold only for eventual resale to certified technicians or to appliance manufacturers (*e.g.,* sold by a manufacturer to a wholesaler, sold by a technician to a reclaimer);

(vi) The refrigerant is sold to an appliance manufacturer;

(vii) The refrigerant is contained in an appliance with a fully assembled refrigerant circuit or an appliance component;

(viii) The refrigerant is charged into an appliance by a certified technician or an apprentice during maintenance, service, or repair of the appliance;

(ix) The refrigerant is exempted under paragraph (a)(1) of this section; or

(x) The substitute refrigerant is intended for use in an MVAC and is sold in a container designed to hold two pounds or less of refrigerant, has a unique fitting, and has a self-sealing valve.

(2) *Self-sealing valve specifications.* This provision will apply starting [ONE YEAR FROM PUBLICATION OF A FINAL RULE IN THE FEDERAL REGISTER] for all containers holding two pounds or less of substitute refrigerant for use in an MVAC that are manufactured and placed into initial inventory or imported on or after that date. All containers holding two pounds or less of substitute refrigerant for use in an MVAC that are manufactured and placed into initial inventory or imported prior to that date must be sold prior to [TWO YEARS FROM PUBLICATION OF A FINAL RULE IN THE FEDERAL REGISTER].

(i) Each container holding two pounds or less of substitute refrigerant for use in an MVAC must be equipped with a single self-sealing valve that automatically closes and seals when not dispensing refrigerant.

(ii) The leakage rate from each container must not exceed 3.00 grams per year when the self-sealing valve is closed. This leakage rate applies to new, full containers as well as containers that may be partially full.

(iii) The leakage rate must be determined using the standards described in appendix E.

(iv) All testing to demonstrate compliance with this paragraph must be conducted by an independent test laboratory in the United States. For purposes of this requirement, an independent test laboratory is one that is not owned, operated, or affiliated with the applicant certifying equipment and/or products.

(3) *Recordkeeping.* (i) Persons who sell or distribute, or offer to sell or distribute, refrigerant must keep invoices that indicate the name of the purchaser, the date of sale, and the quantity of refrigerant purchased unless they are selling exempt substitutes or small cans of MVAC refrigerant in accordance with paragraph (c)(1)(ix) and (x) of this section. In instances where the buyer employs a certified technician, the seller must keep the documentation provided by the buyer that he or she employs at least one technician that is properly certified. All records must be kept for three years.

(ii) Electronic or paper copies of all records described in appendix E must be maintained by manufacturers of containers holding two pounds or less of substitute refrigerant for use in an MVAC to verify self-sealing valves meet the requirements specified in paragraph (c)(2) of this section. All records must be kept for three years.

(d) *Sale of Used Refrigerant.* No person may sell or distribute, or offer for sale or distribution, for use as a refrigerant any class I or class II substance or substitute consisting wholly or in part of used refrigerant unless the refrigerant:

(1) Has been reclaimed by a person who has been certified as a reclaimer under § 82.164;

(2) was used only in an MVAC or MVAC-like appliance and is to be used only in an MVAC or MVAC-like appliance and recycled in accordance with § 82.34(d);

(3) is contained in an appliance that is sold or offered for sale together with a fully assembled refrigerant circuit;

(4) is being transferred between or among a parent company and one or more of its subsidiaries, or between or among subsidiaries having the same parent company;

(5) is being transferred between or among a Federal agency or department and a facility or facilities owned by the same Federal agency or department; or

(6) is exempted under paragraph (a)(1) of this section.

(e) *Manufacture and Sale of Appliances.* (1) No person may sell or distribute, or offer for sale or distribution, any appliance (except small appliances) unless it is equipped with a servicing aperture to facilitate the removal of refrigerant at servicing and disposal.

(2) No person may sell or distribute, or offer for sale or distribution, any small appliance unless it is equipped with a process stub to facilitate the removal of refrigerant at servicing and disposal.

(f) *One-time expansion devices.* No person may manufacture or import a one-time expansion device unless the only refrigerants it contains have been exempted under paragraph (a)(1) of this section.

(g) Rules stayed for consideration. Notwithstanding any other provisions of this subpart, the effectiveness of 40 CFR 82.154(c), only as it applies to refrigerant contained in appliances without fully assembled refrigerant circuits, is stayed from April 27, 1995, until EPA takes final action on its reconsideration of these provisions. EPA will publish any such final action in the **Federal Register**.

■ 5. Add § 82.155 to subpart F to read as follows:

§ 82.155 Safe disposal of appliances.

Until [ONE YEAR FROM PUBLICATION OF A FINAL RULE IN THE FEDERAL REGISTER], this section applies only to disposal of appliances containing class I and class II refrigerants. Starting on [ONE YEAR FROM PUBLICATION OF A FINAL RULE IN THE FEDERAL REGISTER], this section applies to disposal of appliances containing any refrigerant as defined in § 82.152.

(a) Persons who take the final step in the disposal process (including but not limited to scrap recyclers and landfill operators) of a small appliance, MVAC, or MVAC-like appliance (the final processor) must either:

(1) Recover any remaining refrigerant from the appliance in accordance with paragraph (b) of this section; or

(2) Verify using a signed statement or a contract that all refrigerant that had not leaked previously has been recovered from the appliance or shipment of appliances in accordance with paragraph (b) of this section. This statement must include the name and address of the person who recovered the refrigerant and the date the refrigerant was recovered. The signed contract between the supplier and the final processor must state that the supplier will recover any remaining refrigerant from the appliance or shipment of appliances in accordance with this paragraph prior to delivery.

(i) It is a violation of this subpart to accept a signed statement or contract if the person receiving the statement or contract knew or had reason to know that the signed statement or contract is false.

(ii) Persons complying with this paragraph must notify suppliers of appliances that refrigerant must be properly recovered in accordance with paragraph (b) of this section before delivery of the items to the facility. The form of this notification may be signs, letters to suppliers, or other equivalent means.

(b) Persons recovering refrigerant from a small appliance, MVAC, or MVAC-like appliance for purposes of disposal of these appliances must evacuate refrigerant to the levels in § 82.156(b) or

(c) using recovery equipment that meets the standards in § 82.158(e)–(g), as applicable.

(c) *Recordkeeping.* Persons who take the final step in the disposal process of a small appliance, MVAC, or MVAC-like appliance must keep a copy of all the signed statements or contracts obtained under paragraph (a)(2) of this section on site, in paper or electronic format, for at least three years.

■ 6. Revise § 82.156 to read as follows:

§ 82.156 Proper evacuation of refrigerant from appliances.

Until [ONE YEAR FROM PUBLICATION OF A FINAL RULE IN THE FEDERAL REGISTER], this section applies only to proper evacuation of refrigerant from appliances containing class I and class II refrigerants. Starting on [ONE YEAR FROM PUBLICATION OF A FINAL RULE IN THE FEDERAL REGISTER], this section applies to proper evacuation of refrigerant from appliances containing any refrigerant as defined in § 82.152, except that the leak repair provisions in § 82.157 apply in lieu of paragraph (i) of this section.

(a) *Appliances other than small appliances, MVACs, and MVAC-like appliances.* Before opening such appliances, or disposing of such appliances, persons must evacuate the refrigerant, including all the liquid refrigerant (except as provided in paragraph (a)(1)(ii) of this section), to the levels in Table 1 using a recovery and/or recycling machine certified pursuant to § 82.158 unless the situations in paragraphs (a)(1) or (a)(2) apply. Persons may evacuate either the entire appliance or the part to be serviced, if the refrigerant in the part can be isolated to a system receiver. A technician must verify that the applicable level of evacuation has been reached in the appliance or the part before it is opened.

(1) If evacuation of the appliance to the atmosphere is not to be performed after completion of the maintenance, service, or repair, and if the maintenance, service, or repair is not major as defined at § 82.152, the appliance must:

(i) Be evacuated to a pressure no higher than 0 psig before it is opened if it is a medium-, high- or very high-pressure appliance;

(ii) Be pressurized to a pressure no higher than 0 psig before it is opened if it is a low-pressure appliance. Persons must cover openings when isolation is not possible. Persons pressurizing low-pressure appliances that use refrigerants with boiling points at or below 85 degrees Fahrenheit at 29.9 inches of mercury (standard atmospheric pressure), must not use methods such as nitrogen that require subsequent purging. Persons pressurizing low-pressure appliances that use refrigerants with boiling points above 85 degrees Fahrenheit at 29.9 inches of mercury, must use heat to raise the internal pressure of the appliance as much as possible, but may use nitrogen to raise the internal pressure of the appliance from the level attainable through use of heat to atmospheric pressure; or

(iii) For the purposes of oil changes, be evacuated or pressurized to a pressure no higher than 5 psig, before it is opened; or drain the oil into a system receiver to be evacuated or pressurized to a pressure no higher than 5 psig.

(2) If leaks in the appliance make evacuation to the levels in Table 1 unattainable or would substantially contaminate the refrigerant being recovered, persons opening or disposing of the appliance must:

(i) Isolate leaking from non-leaking components wherever possible;

(ii) Evacuate non-leaking components to be opened or disposed of to the levels specified in Table 1; and

(iii) Evacuate leaking components to be opened or disposed of to the lowest level that can be attained without substantially contaminating the refrigerant. This level may not exceed 0 psig.

(3) *Recordkeeping.* Persons evacuating refrigerant from appliances with a full charge of more than 5 and less than 50 pounds of refrigerant for purposes of disposal of that appliance must keep records documenting the following for three years:

(i) The company name, location of the equipment, date of recovery, amount and type of refrigerant recovered for each appliance; and

(ii) The quantity and type of refrigerant transferred for reclamation and/or destruction, to whom it was transferred, and the date of transfer.

TABLE 1—REQUIRED LEVELS OF EVACUATION FOR APPLIANCES

[Except for small appliances, MVACs, and MVAC-like appliances]

Type of appliance	Inches of Hg vacuum (relative to standard atmospheric pressure of 29.9 inches Hg)	
	Using recovery and/or recycling equipment manufactured or imported before November 15, 1993	Using recovery and/or recycling equipment manufactured or imported on or after November 15, 1993
Very high-pressure appliance	0	0
High-pressure appliance, or isolated component of such appliance, with a full charge of less than 200 pounds of refrigerant.	0	0
High-pressure appliance, or isolated component of such appliance, with a full charge of 200 pounds or more of refrigerant.	4	10
Medium-pressure appliance, or isolated component of such appliance, with a full charge of less than 200 pounds of refrigerant.	4	10
Medium-pressure appliance, or isolated component of such appliance, with a full charge of 200 pounds or more of refrigerant.	4	15
Low-pressure appliance	25 mm Hg absolute	25 mm Hg absolute.

(b) *Small appliances.* Before opening a small appliance or when disposing of a small appliance, persons must use a recovery and/or recycling machine certified pursuant to § 82.158 that meets the following conditions:

(1) When using recovery equipment manufactured before November 15,

1993, recover 80% of the refrigerant in the small appliance; or

(2) When using recovery equipment manufactured on or after November 15, 1993, recover 90% of the refrigerant in the appliance when the compressor in the appliance is functioning, or 80% of the refrigerant in the appliance when the compressor in the appliance is not functioning; or

(3) Evacuate the appliance to four inches of mercury vacuum.

(c) *MVACs and MVAC-like appliances.* Persons may only open MVAC and MVAC-like appliances while properly using, as defined at § 82.32(e), recovery and/or recycling equipment certified pursuant to § 82.158(f) or (g), as applicable. All persons recovering refrigerant from MVACs and MVAC-like appliances for purposes of disposal of these appliances must reduce the system pressure to or below 102 mm of mercury vacuum.

(d) System-dependent equipment may not be used with appliances with a full charge of more than 15 pounds of refrigerant, unless the system-dependent equipment is permanently attached to the appliance as a pump-out unit.

(e) Persons who maintain, service, repair, or dispose of only appliances that they own and that contain pump-out units are exempt from the requirement to use certified, self-contained recovery and/or recycling equipment.

(f) All recovery and/or recycling equipment must be used in accordance with the manufacturer's directions unless such directions conflict with the requirements of this subpart.

(g) Refrigerant may be returned to the appliance from which it is recovered or to another appliance owned by the same person without being recycled or reclaimed, unless the appliance is an MVAC or MVAC-like appliance.

(h) [Reserved]

(i) The provisions in this paragraph (i) of this section apply to owners and operators of appliances containing more than 50 pounds of class I and class II refrigerants only until [18 MONTHS FROM PUBLICATION OF A FINAL RULE IN THE FEDERAL REGISTER]. The appliance maintenance and leak repair provisions in § 82.157 apply as of [18 MONTHS FROM PUBLICATION OF A FINAL RULE IN THE FEDERAL REGISTER].

* * * * *

■ 7. Add § 82.157 to Subpart F to read as follows:

§ 82.157 Appliance maintenance and leak repair.

(a) *Applicability.* This section applies as of [18 MONTHS FROM PUBLICATION OF A FINAL RULE IN THE FEDERAL REGISTER]. This section applies only to appliances with a full charge of 50 or more pounds of refrigerant. Unless otherwise specified, the requirements of this section apply to the owner or operator of the appliance.

(b) *Leak Inspections.* (1) Commercial refrigeration and industrial process refrigeration equipment with a full charge of 500 or more pounds of refrigerant must be inspected for leaks once every three months.

(i) Such equipment may be inspected once per year if no refrigerant has been added in the past 365 days (excluding refrigerant added for seasonal variances). The equipment may continue to be inspected once per year if no refrigerant has been added in the past 365 days (excluding refrigerant added for seasonal variances).

(ii) If refrigerant is added to an appliance that is on an annual leak inspection schedule under paragraph (b)(1)(i) of this section, the appliance owner or operator must resume quarterly leak inspections.

(2) Commercial refrigeration and industrial process refrigeration equipment with a full charge of 50 or more pounds but less than 500 pounds of refrigerant must be inspected for leaks once per year.

(3) Comfort cooling appliances or other appliances not covered by paragraphs (a)(1) or (a)(2) with a full charge of 50 or more pounds of refrigerant must be inspected for leaks once per year.

(4) Quarterly or annual leak inspections as described in paragraphs (b)(1)–(3) of this section are not required on appliances continuously monitored by an automatic leak detection system that is audited and calibrated annually. An automatic leak detection system may directly detect refrigerant in air, monitor its surrounding in a manner other than detecting refrigerant concentrations in air, or monitor conditions of the appliance.

(i) For systems that directly detect the presence of a refrigerant in air, the system must:

(A) Only be used on systems where the entire appliance or the compressor, evaporator, condenser, or other component with a high potential to leak is located inside an enclosed building or structure;

(B) Have sensors or intakes placed so that they will continuously monitor the refrigerant concentrations in air in proximity to the compressor, evaporator, condenser, and other areas with a high potential for a refrigerant leak;

(C) Accurately detect a concentration level of 10 parts per million of vapor of the specific refrigerant or refrigerants used in the refrigeration appliance(s); and

(D) Alert the owner or operator when a refrigerant concentration of 100 parts per million of vapor of the specific refrigerant or refrigerants used in the refrigeration appliance(s) is reached.

(ii) For a system that monitors its surrounding in a manner other than detecting refrigerant concentrations in air or monitor conditions of the appliance, the system must automatically alert the owner or operator when measurements indicate a loss of 50 pounds of refrigerant or 10 percent of the full charge, whichever is less.

(5) Owners or operators of federally-owned appliances may submit a request to EPA at the address specified in paragraph (m) of this section to conduct leak inspections less frequently than described in paragraphs (b)(1)–(3) of this section. The frequency of inspections cannot be less than one inspection every three years. The request will be considered approved unless EPA notifies the owner or operator of the appliance within 60 days of receipt of the request that it has been disapproved. Requests must include an alternate leak inspection schedule and demonstrate that:

(i) The appliance has a history of minimal leakage;

(ii) The appliance is remotely located or is otherwise difficult to access for routine maintenance; and

(iii) Use of automatic leak detection equipment is not practical.

(c) *Leak Rate Calculation.* Persons adding or removing refrigerant from an appliance must, upon conclusion of that service, provide the owner or operator with documentations that meets the requirements of paragraph (l)(4) of this section. The leak rate must be calculated every time refrigerant is added to an appliance unless the addition is made immediately following a retrofit, installation of a new appliance, or qualifies as a seasonal variance.

(d) *Requirement to Address Significant Leaks through Appliance Repair, or Retrofitting or Retiring an Appliance.* (1) Appliances with a leak rate over the applicable leak rate in paragraph (d)(2) of this section must be repaired in accordance with paragraphs (e)–(g) of this section unless the owner elects to retrofit or retire the appliance in compliance with paragraphs (h) and (i) of this section. If the owner or operator elects to repair leaks, but fails to successfully comply with paragraphs (e)–(g) of this section, the owner or operator must create and implement a retrofit or retirement plan in accordance with paragraphs (h) and (i) of this section.

(2) *Applicable Leak Rates:* (i) 20 percent leak rate for commercial refrigeration equipment;

(ii) 20 percent leak rate for industrial process refrigeration equipment; and

(iii) 10 percent leak rate for comfort cooling appliances or other appliances with a full charge of 50 or more pounds of refrigerant not covered by (2)(i) or (ii) of this subsection.

(e) *Appliance Repair.* All leaks must be identified and repaired in accordance with this paragraph within 30 days (or 120 days if an industrial process shutdown is required) of an appliance exceeding the applicable leak rate in paragraph (d) of this section.

(1) A leak inspection must be conducted to identify the location of leaks.

(2) All identified leaks must be repaired such that there are no longer any detectable leaks, as documented by an initial and follow-up verification test or tests.

(f) *Verification tests.* Initial and follow-up verification tests are required on each identified leak required to be repaired in paragraph (e) of this section.

(1) *Initial verification test.* Unless granted additional time, an initial verification test must be performed within 30 days (or 120 days if an industrial process shutdown is required) of an appliance exceeding the applicable leak rate in paragraph (d) of this section. An initial verification test must demonstrate that all identified leaks on the appliance are repaired.

(i) For repairs that can be completed without the need to open or evacuate the appliance, the test must be performed as soon as practicable after the conclusion of the repair work and before any additional refrigerant is added to the appliance.

(ii) For repairs that require the evacuation of the appliance or portion of the appliance, the test must be performed before adding any refrigerant to the appliance.

(iii) If the initial verification test indicates that the repairs have not been successful, the owner or operator may conduct as many additional repairs and initial verification tests as needed within the applicable time period.

(2) *Follow-up verification test.* A follow-up verification test must be performed within 10 days of the successful initial verification test or 10 days of the appliance reaching normal operating characteristics and conditions (if appliance or isolated component was evacuated for the repair(s)).

(i) A follow-up verification test must demonstrate that all identified leaks on the appliance are repaired. If the follow-up verification test indicates that the repairs have not been successful, the owner or operator may conduct as many additional repairs and follow-up verification tests as needed within the applicable time period.

(ii) [Reserved].

(g) *Extensions to the appliance repair deadlines in paragraphs (e)–(g) of this section.* The timeframes in paragraphs (e)–(g) of this section are temporarily suspended when an appliance is mothballed. The time will resume on the day additional refrigerant is added to the appliance (or component of an appliance if the leaking component was isolated). Additionally, owners or operators may request more than 30 days (or 120 days if an industrial process shutdown is required) to comply with paragraphs (e) and (f) of this section if they meet the requirements of (g)(1) through (g)(4) of this section. The request will be considered approved unless EPA notifies the owners or operators within 30 days of receipt of the request.

(1) One or more of the following conditions applies:

(i) The appliance is located in an area subject to radiological contamination or shutting down the appliance will directly lead to radiological contamination. Additional time is permitted to the extent needed to conduct and finish repairs in a safe working environment.

(ii) Requirements of other applicable Federal, state, or local regulations make a repair within 30 days (or 120 days if an industrial process shutdown is required) impossible. Additional time is permitted to the extent needed to comply with the pertinent regulations.

(iii) Necessary parts are unavailable. Additional time is permitted up to 30 days after receiving delivery of the necessary parts, not to exceed 180 days (or 270 days if an industrial process shutdown is required) from the date the appliance exceeded the applicable leak rate.

(2) All repairs that do not require additional time must be completed and verified within the initial 30 day repair period (or 120 day repair period if an industrial process shutdown is required);

(3) The owner or operator must document all repair efforts and the reason for the inability to make the repair within the initial 30 day repair period (or 120 day repair period if an industrial process shutdown is required); and

(4) The owner or operator must request an extension from EPA at the address specified in paragraph (m) of this section within 30 days (or 120 days if an industrial process shutdown is required) of the appliance exceeding the applicable leak rate in paragraph (d) of this section. Requests must include: Identification and address of the facility; the name of the owner or operator of the appliance; the leak rate; the method used to determine the leak rate and full charge; the date the appliance exceeded the applicable leak rate; the location of leak(s) to the extent determined to date; any repair work that has been performed thus far, including the date that work was completed; the reasons why more than 30 days (or 120 days if an industrial process shutdown is required) are needed to complete the repair; and an estimate of when the work will be completed. If the estimated completion date is to be extended, a new estimated date of completion and documentation of the reason for that change must be submitted to EPA within 30 days. The owner or operator must keep a dated copy of this submission.

(h) *Retrofit or retirement plans.* The retrofit or retirement plan must be signed by an authorized company official, dated, accessible at the site of the appliance in paper copy or electronic format, and available for EPA inspection upon request.

(1) A retrofit or retirement plan must be created within 30 days of:

(i) discovering that an appliance is leaking above the applicable leak rate in paragraph (d) of this section if the owner or operator intends to retrofit or retire rather than repair the leak; or

(ii) failing to comply with paragraphs (e) and (f) of this section.

(2) A retrofit or retirement plan must, at a minimum, contain the following information:

(i) Identification and location of the appliance;

(ii) Type and full charge of the refrigerant used in the appliance;

(iii) Type and full charge of the refrigerant to which the appliance will be converted, if retrofitted;

(iv) Itemized procedure for converting the appliance to a different refrigerant, including changes required for compatibility with the new substitute, if retrofitted;

(v) Plan for the disposition of recovered refrigerant;

(vi) Plan for the disposition of the appliance, if retired; and

(vii) A schedule, not to exceed one-year, for completion of the appliance retrofit or retirement.

(3) Unless granted additional time, all work performed in accordance with the

plan must be finished within one year of the plan's date (not to exceed 13 months from when the plan was required in paragraph (h)(1) of this section).

(4) All identified leaks must be repaired as part of any retrofit under such a plan.

(i) *Extensions to the one-year retrofit or retirement schedule.* The timeframes in paragraphs (h) and (i) of this section are temporarily suspended when an appliance is mothballed. The time will resume on the day additional refrigerant is added to the appliance (or component of an appliance if the leaking component was isolated). Additionally, owners or operators may request more than one year to comply with paragraphs (h) and (i) of this section if they meet the requirements of this paragraph. The request will be considered approved unless EPA notifies the owners or operators within 60 days of receipt of the request. The request must be submitted to EPA at the address specified in § 82.157(m) within seven months of discovering the appliance exceeded the applicable leak rate. The request must include the identification of the appliance; name of the owner or operator; the leak rate; the method used to determine the leak rate and full charge; the date the appliance exceeded the applicable leak rate; the location of leaks(s) to the extent determined to date; any repair work that has been finished thus far, including the date that work was finished; a plan to finish the retrofit or retirement of the appliance; the reasons why more than one year is necessary to retrofit or retire the appliance; the date of notification to EPA; and an estimate of when retrofit or retirement work will be finished. A dated copy of the request must be available on-site in either electronic or paper copy. If the estimated completion date is to be revised, a new estimated date of completion and documentation of the reason for that change must be submitted to EPA at the address specified in § 82.157(m) within 30 days.

(1) *Extensions available to any appliance.* Owners or operators of commercial refrigeration, industrial process refrigeration, comfort-cooling, or other equipment are automatically allowed 18 months to retire an appliance if the replacement uses a refrigerant exempt from the venting prohibition in § 82.154(a).

(2) *Extensions available to industrial process refrigeration.* Owners or operators of industrial process refrigeration equipment may request additional time beyond the one-year period in paragraph (h) of this section to finish the retrofit or retirement under the following circumstances.

(i) Requirements of other applicable Federal, state, or local regulations make a retrofit or retirement within one year impossible. Additional time is permitted to the extent needed to comply with the pertinent regulations; or

(ii) The new or the retrofitted equipment is custom-built as defined in this subpart and the supplier of the appliance or one of its components has quoted a delivery time of more than 30 weeks from when the order is placed. The appliance or appliance components must be installed within 120 days after receiving delivery of the necessary parts.

(3) *Extensions available to Federally-owned equipment.* Owners or operators of Federally-owned commercial or comfort-cooling equipment may request an additional year beyond the one-year period in paragraph (h) of this section to finish the retrofit or retirement under the following circumstances:

(i) A delivery time of more than 30 weeks from the beginning of the official procurement process is quoted due to complications presented by the Federal agency appropriations and/or procurement process;

(ii) The appliance is located in an area subject to radiological contamination and creating a safe working environment will require more than 30 weeks; or

(iii) After receiving a one-year extension under subparagraphs (i)(3)(i) or (ii) of this section, additional time is necessary to finish the retrofit or retirement of equipment. The request must be submitted to EPA before the end of the ninth month of the one-year extension and must include the same information submitted for that one-year extension, with any necessary revisions. A dated copy of the request must be available on-site in either electronic or paper copy. The request will be considered approved unless EPA notifies the owners or operators within 60 days of receipt of the request.

(j) *Two-year leak limit.* Appliances containing 50 pounds or more of refrigerant are prohibited from leaking more than 75 percent of the full charge in each of two consecutive twelve-month periods. Under paragraph (c) of this section, the leak rate must be calculated every time refrigerant is added to an appliance. By the end of the second twelve-month period, appliances that exceed this limit must be retired or mothballed until retired.

(k) *Purged refrigerant.* In calculating annual leak rates, purged refrigerant that is destroyed at a verifiable destruction efficiency of 98 percent or greater will not be counted toward the leak rate.

(l) *Recordkeeping.* All records identified in this paragraph must be kept for three years in electronic or paper format.

(1) Owners or operators must keep records of leak inspections that include the date of inspection, the method used to conduct the leak inspection, a list of the location of each leak that was identified, and a certification that all visible parts of the appliance were inspected.

(2) If using an automatic leak detection system, the owner or operator must maintain records regarding the installation and the annual audit and calibration of the system. They also must keep a record of each date the monitoring system identified a leak and the location of the leak.

(3) Owners or operators must determine the full charge of all appliances with 50 or more pounds of refrigerant (as defined in § 82.152), and maintain the following information for each appliance:

(i) The identification of the owner or operator of the appliance;

(ii) The address where the appliance is located;

(iii) The full charge of the appliance and the method for how the full charge was determined;

(iv) The range for the full charge of the appliance, its midpoint, and how the range was determined (if using method 4, as defined in § 82.152, for determining full charge);

(v) Any revisions of the full charge and how they were determined; and

(vi) The dates such revisions occurred.

(4) Owners or operators are required to maintain a record including the following information for each time an appliance with a full charge of 50 or more pounds is maintained, serviced, repaired, or disposed of, when applicable. If the maintenance, service, repair, or disposal is done by someone other than the owner, that person must provide a record containing the following information to the owner or operator, when applicable:

(i) The identity and location of the appliance;

(ii) The date of the maintenance, service, repair, or disposal performed;

(iii) The part(s) of the appliance being serviced and for each part, the type of maintenance, service, repair, or disposal performed;

(iv) The name of the person performing the maintenance, service, repair or disposal;

(v) The amount and type of refrigerant added to or removed from the appliance;

(vi) The full charge of the appliance; and

(vii) The leak rate and the method used to determine the leak rate (not applicable when disposing of the appliance, following a retrofit, installation of a new appliance, or if the refrigerant addition qualifies as a seasonal variance).

(5) Owners or operators must maintain records of the dates and results of all initial and follow-up verification tests. Records must include at minimum the location of the appliance, the date of the verification test or tests, the location of all repaired leaks that were tested, the type of verification test used, and the results of those tests.

(6) Owners or operators must maintain retrofit or retirement plans developed in accordance with paragraph (h) of this section.

(7) Owners or operators must maintain retrofit and/or extension requests submitted to EPA in accordance with paragraph (i) of this section.

(8) Owners or operators that suspend the deadlines in this section by mothballing an appliance must keep records documenting when the appliance was mothballed and when additional refrigerant was added to the appliance (or isolated component).

(9) Owners or operators who exclude purged refrigerants that are destroyed from annual leak rate calculations must maintain records to support the amount of refrigerant claimed as sent for destruction. Records must be based on a monitoring strategy that provides reliable data to demonstrate that the amount of refrigerant claimed to have been destroyed is not greater than the amount of refrigerant actually purged and destroyed and that the 98 percent or greater destruction efficiency is met. Records must include flow rate, quantity or concentration of the refrigerant in the vent stream, and periods of purge flow. Records must include:

(i) the identification of the facility and a contact person, including the address and telephone number;

(ii) A description of the appliance, focusing on aspects relevant to the purging of refrigerant and subsequent destruction;

(iii) A description of the methods used to determine the quantity of refrigerant sent for destruction and type of records that are being kept by the owners or operators where the appliance is located;

(iv) The frequency of monitoring and data-recording; and

(v) A description of the control device, and its destruction efficiency.

(10) Owners or operators that exclude additions of refrigerant due to seasonal variance from their leak rate calculation must maintain records in accordance with paragraph (c) of this section.

(11) Owners or operators that submit reports to EPA in accordance with paragraph (m) of this section, must maintain copies of the submitted reports and any responses from EPA.

(12) Owners or operators of federally-owned appliances that request an alternate leak inspection schedule in accordance with paragraph (b)(5) of this section must maintain copies of the submitted requests and all responses from EPA until three years after the less frequent leak inspection schedule is no longer being followed.

(m) *Reporting.* All notifications must be submitted electronically to *608reports@epa.gov* unless the notification contains confidential business information. If the notification contains confidential business information, the information should be submitted to: Section 608 Program Manager; Stratospheric Protection Division; Mail Code: 6205T; U.S. Environmental Protection Agency; 1200 Pennsylvania Avenue NW.; Washington, DC 20460.

(1) Owners or operators must notify EPA at this address in accordance with paragraph (b)(5) of this section when seeking an alternate leak inspection schedule.

(2) Owners or operators must notify EPA at this address in accordance with paragraph (g) of this section when seeking an extension of time to complete repairs.

(3) Owners or operators must notify EPA at this address in accordance with paragraph (i) of this section when seeking an extension of time to complete the retrofit or retirement of an appliance.

(4) When excluding purged refrigerants that are destroyed from annual leak rate calculations, owners or operators must notify EPA at this address within 60 days after the first time the exclusion is used by the facility where the appliance is located. The report must include the information included in paragraph (l)(9) of this section.

■ 8. Revise § 82.158 to read as follows:

§ 82.158 Standards for recovery and/or recycling equipment.

(a) No person may manufacture or import recovery and/or recycling equipment for use during the maintenance, service, repair, or disposal of appliances unless the equipment is certified in accordance with this section.

(b) No person may alter the design of certified refrigerant recovery and/or recycling equipment in a way that would affect the equipment's ability to meet the certification standards in this section without resubmitting the altered design for certification testing. Until it is tested and shown to meet the certification standards in this section, equipment so altered will be considered uncertified.

(c) Recovery and/or recycling equipment manufactured or imported before November 15, 1993, intended for use during the maintenance, service, repair, or disposal of appliances (except small appliances, MVACs, and MVAC-like appliances) will be considered certified if it is capable of achieving the level of evacuation specified in Table 2 of this section when tested using a properly calibrated pressure gauge.

(d) Manufacturers and importers of recovery and/or recycling equipment must have such equipment certified by an approved equipment testing organization as follows:

(1) Recovery and/or recycling equipment manufactured or imported on or after November 15, 1993, and before September 22, 2003, intended for use during the maintenance, service, repair, or disposal of appliances (except small appliances, MVACs, and MVAC-like appliances) must be certified by an approved equipment testing organization as being capable of achieving the level of evacuation specified in Table 2 of this section under the conditions of appendix B1 of this subpart (based upon the ARI Standard 740–1993, *Performance of Refrigerant Recovery, Recycling and/or Reclaim Equipment*).

(2) Recovery and/or recycling equipment manufactured or imported on or after September 22, 2003, and before January 1, 2017, intended for use during the maintenance, service, repair, or disposal of appliances (except small appliances, MVACs, and MVAC-like appliances) must be certified by an approved equipment testing organization as being capable of achieving the level of evacuation specified in Table 2 of this section under the conditions of appendix B2 of this subpart (based upon the ARI Standard 740–1995, *Performance of Refrigerant Recovery, Recycling and/or Reclaim Equipment*).

(3) Recovery and/or recycling equipment manufactured or imported on or after January 1, 2017, intended for use during the maintenance, service, repair, or disposal of appliances (except small appliances, MVACs, and MVAC-like appliances) must be certified by an approved equipment testing

organization as being capable of achieving the level of evacuation specified in Table 2 of this section under the conditions of appendix B3 (for non-flammable refrigerants) or appendix B4 (for flammable refrigerants) of this subpart.

TABLE 2—LEVELS OF EVACUATION WHICH MUST BE ACHIEVED BY RECOVERY AND/OR RECYCLING EQUIPMENT

[Except for small appliances, MVACs, and MVAC-like appliances]

Type of appliance with which recovery and/or recycling machine is intended to be used	Inches of Hg vacuum (relative to standard atmospheric pressure of 29.9 inches Hg)	
	Manufactured or imported before November 15, 1993	Manufactured or imported on or after November 15, 1993
HCFC–22 appliances, or isolated component of such appliances, with a full charge of less than 200 pounds of refrigerant.	0	0
HCFC–22 appliances, or isolated component of such appliances, with a full charge of 200 pounds or more of refrigerant.	4	10
Very high-pressure appliances	0	0
Other high-pressure appliances, or isolated component of such appliances, with a full charge of less than 200 pounds of refrigerant.	4	10
Other high-pressure appliances, or isolated component of such appliances, with a full charge of 200 pounds or more of refrigerant.	4	15
Medium-pressure appliances, or isolated component of such appliances, with a full charge of less than 200 pounds of refrigerant.	4	10
Medium-pressure appliances, or isolated component of such appliances, with a full charge of 200 pounds or more of refrigerant.	4	15
Low-pressure appliances	25 mm Hg absolute	25 mm Hg absolute.

(4) Recovery and/or recycling equipment whose recovery efficiency cannot be tested according to the procedures in appendix B1, B2, B3, or B4 of this subpart as applicable may be certified if an approved third-party testing organization adopts and performs a test that demonstrates, to the satisfaction of the Administrator, that the recovery efficiency of that equipment is equal to or better than that of equipment that:

(i) Is intended for use with the same type of appliance; and

(ii) Achieves the level of evacuation in Table 2. The manufacturer's instructions must specify how to achieve the required recovery efficiency, and the equipment must be tested when used according to these instructions.

(5) The equipment must meet the minimum requirements for certification under appendix B1, B2, B3, or B4 of this subpart as applicable.

(6) If the equipment is equipped with a noncondensables purge device, the equipment must not release more than 3 percent of the quantity of refrigerant being recycled through noncondensables purging under the conditions of appendix B1, B2, B3, or B4 of this subpart as applicable.

(7) The equipment must be equipped with low-loss fittings on all hoses.

(8) The equipment must have its liquid recovery rate and its vapor recovery rate measured under the conditions of appendix B1, B2, B3, or B4 as applicable, unless the equipment has no inherent liquid or vapor recovery rate.

(e) *Small Appliances.* Equipment used during the maintenance, service, repair, or disposal of small appliances must be certified by an approved equipment testing organization to be capable of recovering 90% of the refrigerant in the test stand when the compressor of the test stand is operational and 80% of the refrigerant when the compressor of the test stand is not operational, when used in accordance with the manufacturer's instructions under the conditions of appendix C, Method for Testing Recovery Devices for Use with Small Appliances.

(1) Equipment manufactured or imported before November 15, 1993, will be considered certified if it is capable of either recovering 80% of the refrigerant in the system, whether or not the compressor of the test stand is operational, or achieving a four-inch vacuum when tested using a properly calibrated pressure gauge.

(2) Equipment manufactured or imported on or after November 15, 1993, may also be certified if it is capable of achieving a four-inch vacuum under the conditions of appendix B1 of this subpart, based upon ARI Standard 740–1993.

(3) Equipment manufactured or imported on or after September 22, 2003, and before January 1, 2017, may also be certified if it is capable of achieving a four-inch vacuum under the conditions of appendix B2 of this subpart, based upon ARI Standard 740–1995.

(4) Equipment manufactured or imported on or after January 1, 2017, may also be certified if it is capable of achieving a four-inch vacuum under the conditions of appendix B3 (for non-flammable refrigerants) or appendix B4 (for flammable refrigerants) of this subpart.

(5) Equipment used to evacuate refrigerant from small appliances before they are disposed of may also be certified if it is capable of achieving a four-inch vacuum when tested using a properly calibrated pressure gauge.

(f) *MVAC-like appliances.* (1) Manufacturers and importers of recovery and/or recycling equipment intended for use during the maintenance, service, repair, or disposal of MVAC-like appliances must certify such equipment in accordance with § 82.36(a).

(2) Equipment manufactured or imported before November 15, 1993, intended for use during the maintenance, service, or repair of MVAC-like appliances must be capable of reducing the system pressure to 102 mm of mercury vacuum under the conditions of the SAE Standard, SAE J1990 (appendix A to 40 CFR part 82, subpart B).

(g) *MVACs.* Equipment used to evacuate refrigerant from MVACs before they are disposed of must be certified in accordance with § 82.36(a).

(h) *Labeling.* Manufacturers and importers of equipment certified under paragraphs (d) and (e) of this section must place a label on each piece of equipment stating the following:

THIS EQUIPMENT HAS BEEN CERTIFIED BY [APPROVED EQUIPMENT TESTING ORGANIZATION] TO MEET EPA's

MINIMUM REQUIREMENTS FOR RECYCLING OR RECOVERY EQUIPMENT INTENDED FOR USE WITH [APPROPRIATE CATEGORY OF APPLIANCE].

The label must also show the date of manufacture and the serial number (if applicable) of the equipment. The label must be affixed in a readily visible or accessible location, be made of a material expected to last the lifetime of the equipment, present required information in a way that it is likely to remain legible for the lifetime of the equipment, and be affixed in such a way that it cannot be removed from the equipment without damage to the label.

(i) *Retesting.* At least once every three years, manufacturers or importers of recovery and/or recycling equipment intended for use during the maintenance, service, or repair of appliances (except MVACs or MVAC-like appliances) or during the disposal of appliances (except small appliances, MVACs, and MVAC-like appliances) must have approved equipment testing organizations conduct either:

(1) Retests of certified recovery and/or recycling equipment in accordance with paragraphs (d) and (e) of this section; or

(2) Inspections of recovery and/or recycling equipment at manufacturing facilities to ensure that each equipment model line that has been certified under this section continues to meet the certification criteria.

(j) *Revocation.* An equipment model line that has been certified under this section may have its certification revoked if it is subsequently determined to fail to meet the certification criteria. In such cases, the Administrator must give notice to the manufacturer or importer setting forth the basis for the determination.

(k) Equipment that is advertised or marketed as ''recycling equipment'' must be capable of recycling the standard contaminated refrigerant sample of appendix B2, B3, or B4 of this subpart (as applicable) to the levels in the following table when tested under the conditions of appendix B2, B3 or B4 of this subpart:

MAXIMUM LEVELS OF CONTAMINANTS PERMISSIBLE IN REFRIGERANT PROCESSED THROUGH EQUIPMENT ADVERTISED AS ''RECYCLING'' EQUIPMENT

Contaminants	Low-pressure (R–11, R–123, R–113) systems	R–12 Systems	All other systems
Acid Content (by wt.)	1.0 PPM	1.0 PPM	1.0 PPM.
Moisture (by wt.)	20 PPM	10 PPM	20 PPM.
Noncondensable Gas (by vol.)	N/A	2.0%	2.0%.
High Boiling Residues (by vol.)	1.0%	0.02%	0.02%.
Chlorides by Silver Nitrate Test	No turbidity	No turbidity	No turbidity.
Particulates	Visually clean	Visually clean	Visually clean.

■ 9. Revise § 82.160 to read as follows:

§ 82.160 Approved equipment testing organizations.

(a) Any equipment testing organization may apply for approval by the Administrator to certify equipment under the standards in § 82.158 and appendices B2, B3, B4, or C of this subpart. Applications must be sent to *608reports@epa.gov,* or if containing confidential business information, mailed to: Section 608 Program Manager; Stratospheric Protection Division; Mail Code: 6205T; U.S. Environmental Protection Agency; 1200 Pennsylvania Avenue NW., Washington, DC 20460.

(b) Applications for approval must include:

(1) A list of equipment present at the organization that will be used for equipment testing.

(2) Verification of the organization's expertise in equipment testing and the technical experience of the organization's personnel.

(3) Verification of the organization's knowledge of the standards and recordkeeping and reporting requirements of this subpart.

(4) A description of the organization's program for verifying the performance of certified recovery and/or recycling equipment manufactured over the long term, specifying whether retests of equipment or inspections of equipment at manufacturing facilities will be used.

(5) Verification that the organization has no conflict of interest and receives no direct or indirect financial benefit from the outcome of certification testing.

(6) Agreement to allow the Administrator access to records and personnel to verify the information contained in the application.

(c) Organizations may not certify equipment before receiving approval from EPA. If approval is denied under this section, the Administrator must give written notice to the organization setting forth the basis for the determination.

(d) If an approved testing organization conducts certification tests in a way not consistent with the representations made in its application or with the provisions of this subpart, the Administrator may revoke approval in accordance with § 82.169. In such cases, the Administrator must give notice to the organization setting forth the basis for the determination.

(e) *Recordkeeping and reporting.* (1) Approved equipment testing organizations must maintain records of equipment testing and performance and a list of equipment that meets EPA requirements. This list must include the name of the manufacturer and the name and/or serial number of the model line. Approved equipment testing organizations must publish online a list of all certified equipment that includes the information specified above and update the list annually.

(2) Approved equipment testing organizations must notify EPA at *608reports@epa.gov* if retests of equipment or inspections of manufacturing facilities conducted under to § 82.158(i) show that a previously certified model line fails to meet EPA requirements. Such notification must be received within thirty days of the retest or inspection.

■ 10. Revise § 82.161 to read as follows:

§ 82.161 Technician certification.

Until [ONE YEAR FROM PUBLICATION OF A FINAL RULE IN THE FEDERAL REGISTER], this section applies only to technicians and organizations certifying technicians that maintain, service, or repair appliances containing class I and class II refrigerants. Starting on [ONE YEAR FROM PUBLICATION OF A FINAL RULE IN THE FEDERAL REGISTER], this section applies to technicians and organizations certifying technicians that maintain, service, or repair appliances containing any refrigerant as defined in § 82.152.

(a) *Requirements for Technicians.* (1) Technicians must pass a certification exam offered by an approved technician certification program to work on different types of appliances, as follows:

(i) Technicians who maintain, service, or repair small appliances must be certified as Type I technicians.

(ii) Technicians who maintain, service, repair, or dispose of medium-, high-, or very high-pressure appliances (except small appliances, MVACs, and MVAC-like appliances) must be certified as Type II technicians.

(iii) Technicians who maintain, service, repair, or dispose of low-pressure appliances must be certified as Type III technicians.

(iv) Excluding persons who exclusively dispose of small appliances, MVACs, and MVAC-like appliances, technicians who maintain, service, repair, or dispose of appliances as described in paragraph (a)(1)(i)–(iii) of this section must be certified as Universal technicians.

(v) Technicians who maintain, service, or repair MVAC-like appliances must either be certified as Type II technicians or be certified by a training and certification program approved under § 82.40.

(vi) Technicians who maintain, service, or repair MVAC appliances must be certified by a training and certification program approved under § 82.40.

(2) Apprentices are exempt from the requirement in paragraph (a)(1) of this section provided the apprentice is closely and continually supervised by a certified technician while performing any maintenance, service, repair, or disposal that could reasonably be expected to release refrigerant from an appliance into the environment. The supervising certified technician and the apprentice have the responsibility to ensure that the apprentice complies with this subpart.

(3) The Administrator may require technicians to demonstrate at their place of business their ability to perform proper procedures for recovering and/or recycling refrigerant. Failure to demonstrate or failure to properly use the equipment may result in revocation or suspension of the certificate. Failure to abide by any of the provisions of this subpart may also result in revocation or suspension of the certificate. If a technician's certificate is revoked, the technician would need to recertify before maintaining, servicing, repairing, or disposing of any appliances.

(4) Technicians certified under this section must keep a copy of their certificate at their place of business.

(5) *Recertification.* The Administrator reserves the right to specify a requirement for technician recertification at some future date, if necessary, by placing a notice in the **Federal Register**.

(b) *Requirements for Technician Certification Programs.* (1) No technician training or testing program may issue certificates under this section unless the program complies with all the standards of this section and appendix D, and has been granted approval by the Administrator.

(2) *Program Approval.* Persons may seek approval of any technician certification program (program), in accordance with this paragraph, by submitting to the Administrator at the address in § 82.160(a) verification that the program meets all the standards listed in appendix D. The Administrator reserves the right to consider other relevant factors to ensure the effectiveness of certification programs. If approval is denied under this section, the Administrator must give written notice to the program setting forth the basis for the determination.

(3) *Alternative Examinations.* Programs are encouraged to make provisions for non-English speaking technicians by providing tests in other languages or allowing the use of a translator when taking the test. A test may be administered orally to any person who makes this request, in writing, to the program at least 30 days before the scheduled date for the examination. The written request must explain why the request is being made.

(4) *Proof of Certification.* Programs certifying technicians must provide technicians with identification cards in accordance with section (f) of appendix D of this subpart.

(5) Programs certifying technicians must maintain records in accordance with section (g) of appendix D of this subpart.

(6) Starting January 1, 2018, programs certifying technicians, excluding Federally-run programs, must create and maintain a publicly-searchable database of technicians they have certified.

(i) At a minimum, the database must include all technicians certified after January 1, 2017.

(ii) The database must provide the first name, middle initial, and last name of the certified technician, the technician's city of residence when taking the test, the type(s) of certification received, and the date each certification was completed.

(iii) Programs certifying technicians must provide notice to technicians of their inclusion in the database in compliance with any other federal, state or local regulations, and give technicians the ability to opt out of being included in the database.

(7) If an approved program violates any of the above requirements, the Administrator may revoke approval in accordance with § 82.169. In such cases, the Administrator must give notice to the organization setting forth the basis for the determination.

(c) *Test Subject Material.* A bank of test questions developed by the Administrator consists of groups, including a core group and technical groups. The Administrator will release this bank of questions only to approved technician certification programs. Each test for each type of certification must include at least 25 questions drawn from the core group and at least 25 questions drawn from each relevant technical group. These questions must address the subject areas in appendix D.

■ 11. Remove and reserve § 82.162:

§ 82.162 [Reserved]

■ 12. Revise § 82.164 to read as follows:

§ 82.164 Reclaimer certification.

(a) All persons reclaiming used refrigerant for sale to a new owner must meet the following requirements:

(1) Reclaim refrigerant to all the specifications in appendix A of this subpart (based on AHRI Standard 700–2015, *Specifications for Refrigerants*) that are applicable to that refrigerant;

(2) Verify that each batch of refrigerant reclaimed meets these specifications using the analytical methodology prescribed in appendix A, which includes the primary methodologies included in the appendix to the AHRI Standard 700–2015;

(3) Release no more than 1.5 percent of the refrigerant during the reclamation process;

(4) Dispose of wastes from the reclamation process in accordance with all applicable laws and regulations; and

(5) Maintain records and submit reports in accordance with paragraph (d) of this section.

(b) The owner or a responsible officer reclaiming used refrigerant for sale to a new owner, except for persons who properly certified under this section before May 11, 2004, must certify to the Administrator at the address in § 82.160(a) that they will meet the requirements in paragraph (a) of this section. The certification must include the name and address of the reclaimer and a list of equipment used to reclaim the refrigerant to the required standard, and to analyze the refrigerant to ensure it meets these specifications.

(c) Certificates are not transferable. In the event of a change in ownership of an entity which reclaims refrigerant, the new owner of the entity must certify with the Administrator within 30 days of the change of ownership under this section. In the event of a change in business management, location, or contact information, the owner of the entity must notify EPA within 30 days of the change at the address in § 82.160(a).

(d) *Recordkeeping and reporting.* (1) Reclaimers must maintain records of the analysis conducted to verify that reclaimed refrigerant meets the necessary specifications in paragraphs (a)(1) and (a)(2) of this section.

(2) Reclaimers must maintain records of the names and addresses of persons sending them material for reclamation and the quantity of the material (the combined mass of refrigerant and contaminants) by refrigerant type sent to them for reclamation. Such records must be maintained on a transactional basis for three years.

(3) Reclaimers must report to the Administrator annually within 30 days of the end of the calendar year the total annual quantity of material (the combined mass of refrigerant and contaminants) by refrigerant type sent to them for reclamation, the total annual mass of each refrigerant reclaimed, and the total annual mass of waste products.

(e) Failure to abide by any of the provisions of this subpart may result in revocation or suspension of the certification of the reclaimer in accordance with § 82.169. In such cases, the Administrator must give notice to the organization setting forth the basis for the determination.

■ 13. Amend section 82.166 by:

■ a. Removing and reserving paragraphs (a) through (i), and (l); and

■ b. Revising paragraph (m).

Revisions to read as follows:

§ 82.166 Reporting and recordkeeping requirements.

(a)–(i) [Reserved]

* * * * *

(l) [Reserved]

(m) All records required to be maintained pursuant to this section must be kept for a minimum of three years unless otherwise indicated.

* * * * *

■ 14. Amend subpart F by revising appendix A to read as follows:

APPENDIX A TO SUBPART F OF PART 82—SPECIFICATIONS FOR REFRIGERANTS

This appendix is based on the Air-Conditioning, Heating, and Refrigeration Institute Standard 700–2015, *Specifications for Refrigerants.*

Section 1. Purpose

1.1 *Purpose.* The purpose of this standard is to evaluate and accept/reject refrigerants regardless of source (*i.e.,* new, reclaimed and/or repackaged) for use in new and existing refrigeration and air-conditioning products as required under 40 CFR part 82.

1.1.1 *Intent.* This standard is intended for the guidance of the industry including manufacturers, refrigerant reclaimers, repackagers, distributors, installers, servicemen, contractors and for consumers.

1.1.2 *Review and Amendment.* This standard is subject to review and amendment as the technology advances.

Section 2. Scope

2.1 *Scope.* This standard specifies acceptable levels of contaminants (purity requirements) for various fluorocarbon and other refrigerants regardless of source and lists acceptable test methods. These refrigerants are as referenced in the ANSI/ASHRAE Standard 34 with Addenda:

2.1.1 Single-Component Fluorocarbon Refrigerants: R–11, R–12, R–13, R–22, R–23, R–32, R–113, R–114, R–115, R–116, R–123, R–124, R–125, R–134a, R–141b, R–142b, R–143a, R–152a, R–218, R–227ea, R–236fa, R–245fa, R–1233zd(E), R–1234yf, R–1234ze(E);

2.1.2 Single Component Hydrocarbon Refrigerants: R–50, R–170, R–E170, R–290, R–600, R–600a, R–601, R–601a, R–610, R–1150, R–1270;

2.1.3 Carbon Dioxide Refrigerant: R–744;

2.1.4 Zeotropic Blend Refrigerants: R–401A, R–401B, R–402A, R–402B, R–403A, R–403B, R–404A, R–405A, R–406A, R–407A, R–407B, R–407C, R–407D, R–407E, R–407F, R–408A, R–409A, R–409B, R–410A, R–410B, R–411A, R–411B, R–412A, R–413A, R–414A, R–414B, R–415A, R–415B, R–416A, R–417A, R–417B, R–417C, R–418A, R–419A, R–419B, R–420A, R–421A, R–421B, R–422A, R–422B, R–422C, R–422D, R–422E, R–423A, R–424A, R–425A, R–426A, R–427A, R–428A, R–429A, R–430A, R–431A, R–434A, R–435A, R–437A, R–438A, R–439A, R–440A, R–442A, R–444A, R–444B, R–445A, R–446A, R–447A, R–448A, R–49A, R–450A;

2.1.5 Zeotropic Hydrocarbon Blend Refrigerants: R–432A, R–433A, R–433B, R–433C, R–436A, R–436B, R–441A, R–443A; and

2.1.6 Azeotropic Blend Refrigerants: R–500, R–502, R–503, R–507A, R–508A, R–508B, R–509A, R–510A, R–511A, and R–512A.

Section 3. Definitions

3.1 *Definitions.* All terms in this appendix will follow the definitions in § 82.152 unless otherwise defined in this appendix.

3.2 *Shall, Should, Recommended,* or *It Is Recommended* shall be interpreted as follows:

3.2.1 *Shall.* Where ''shall'' or ''shall not'' is used for a provision specified, that provision is mandatory if compliance with this appendix is claimed.

3.2.2 *Should, Recommended,* or *It is Recommended* is used to indicate provisions which are not mandatory but which are desirable as good practice.

Section 4. Characterization of Refrigerants and Contaminants

4.1 *Characterization.* Characterization of single component fluorocarbon (Table 1A) and zeotropic/azeotropic blend (Table 2A/3) refrigerants and contaminants are listed in the following general classifications:

4.1.1 Isomer content (see Table 1A)

4.1.2 Air and other non-condensables (see Tables 1A, 2A, 3)

4.1.3 Water (see Tables 1A, 2A, 3)

4.1.4 All other volatile impurities (see Tables 1A, 2A, 3)

4.1.5 High boiling residue (see Tables 1A, 2A, 3)

4.1.6 Halogenated unsaturated volatile impurities (see Table 1A)

4.1.7 Particulates/solids (see Tables 1A, 2A, 3)

4.1.8 Acidity (see Tables 1A, 2A, 3)

4.1.9 Chloride (see Tables 1A, 2A, 3)

4.2 *Hydrocarbon Characterization.* Characterization of hydrocarbon refrigerants (Tables 1B and 2B) and contaminants are listed in the following general classifications:

4.2.1 Nominal composition

4.2.2 Other allowable impurities

4.2.3 Air and other non-condensables

4.2.4 Sulfur odor

4.2.5 High boiling residue

4.2.6 Particulates/solids

4.2.7 Acidity

4.2.8 Water

4.2.9 All other volatile impurities

4.2.10 Total C3, C4, and C5 polyolefins

4.3 *Carbon Dioxide Characterization.* Characterization of carbon dioxide (Table 1C) and its contaminants are listed in the following general classifications:

4.3.1 Purity

4.3.2 Air and other non-condensables

4.3.3 Water

4.3.4 High boiling residue

4.3.5 Particulates/solids

Section 5. Sampling and Summary of Test Procedures

5.1 *Referee Test.* The referee test methods for the various contaminants are summarized in the following paragraphs. Detailed test procedures are included in *Appendix C to AHRI Standard 700.* If alternative test methods are employed, the user must be able to demonstrate that they produce results at least equivalent to the specified referee test method.

5.2 *Refrigerant Sampling*

5.2.1 *Sampling Precautions.* Special precautions should be taken to ensure that representative samples are obtained for analysis. Sampling shall be done by qualified personnel following accepted sampling and safety procedures. Refrigerants with critical temperatures near or below ambient temperature cannot be reliably sampled for both liquid and vapor phase without special handling.

Note: Flammable refrigerants which are ASHRAE 34 class 2L, 2, or 3 present additional safety challenges and require additional measures for sampling safety procedures compared to nonflammable halocarbons documented in this standard.

5.2.2 *Cylinder Preparation.* Place a clean, empty sample cylinder with the valve open in an oven at 110 °C (230 °F) for one hour. Remove it from the oven while hot, immediately connect it to an evacuation system and evacuate to less than 56 kPa. Close the valve and allow it to cool. Weigh the empty cylinder.

5.2.3 *Vapor Phase Sampling.* A vapor phase sample shall be obtained for determining the non-condensables. The source temperature shall be measured and recorded at the time the sample is taken.

5.2.3.1 *Special Handling for Low Critical Temperature Refrigerant.* A vapor phase sample is required to determine non-condensables and volatile impurities, including other refrigerants. The vapor phase sample is obtained by regulating the sample container temperature to 5 K or more above the refrigerant critical temperature.

5.2.3.2 *Handling for Liquid Refrigerants with Boiling Points Near or Above Room Temperature.* Since R–11, R–113, R–123, R–141b, R–245fa, and R–1233zd(E) have normal boiling points near or above room temperature, non-condensable determination is not required for these refrigerants.

Note: Non-condensable gases, if present, will concentrate in the vapor phase of the refrigerant; care must be exercised to eliminate introduction of either air or liquid phase refrigerant during the sample transfer.

5.2.4 *Liquid Phase Sampling.* A liquid phase sample is required for all tests listed in this standard except the test for non-condensables.

5.2.4.1 *Liquid Sampling.* Accurate analysis requires that the sample cylinder, at ambient temperature, be filled to at least 60% by volume; however, under no circumstances should the cylinder be filled to more than 80% by volume. This can be accomplished by weighing the empty cylinder and then the cylinder with refrigerant. When the desired amount of refrigerant has been collected, close the valve(s) and immediately disconnect the sample cylinder.

Note: Care should be taken to ensure that all connections and transfer lines are dry and evacuated to avoid contaminating the sample.

Note: Low critical temperature refrigerants can have extremely high pressure and the sampling vessel, all connections, and transfer lines must be designed to handle high pressures.

5.2.4.2 *Special Handling for Low Critical Temperature Refrigerant.* A liquid phase sample is required for all testing except volatile impurities, including other refrigerants. The liquid phase sample is obtained by regulating the sample cylinder temperature to 2 °C below the critical temperature of the refrigerant.

Note: If free water is present in the sample, cooling to below 0 °C may result in the formation of ice. Clathrates may form at temperatures above 0 °C with some fluorocarbon refrigerants.

5.2.4.3 *Record Weight.* Check the sample cylinder for leaks and record the gross weight.

5.3 *Refrigerant Identification.* The required method shall be gas chromatography (GC) as described in *Appendix C to AHRI Standard 700–2015* with the corresponding gas chromatogram figures as illustrated in Informative Appendix D to AHRI Standard 700. The chromatogram of the sample shall be compared to known standards.

5.3.2 *Alternative Method.* Determination of the boiling point and boiling point range is an acceptable alternative test method which can be used to characterize refrigerants. The test method shall be that described in the Federal Specification for ''Fluorocarbon Refrigerants,'' BB–F–1421 B, dated March 5, 1982, section 4.4.3.

5.3.3 *Required Values.* The required values for boiling point and boiling point range are given in Table 1A, *Physical Properties of Single Component Refrigerants;* Table 1B, *Physical Properties of Zeotropic Blends (400 Series Refrigerants);* and Table 1C, *Physical Properties of Azeotropic Blends (500 Series Refrigerants).*

5.4 *Water Content.*

5.4.1 *Method.* The Coulometric Karl Fischer Titration shall be the primary test method for determining the water content of refrigerants. This method is described in *Appendix C to AHRI Standard 700–2015.* This method can be used for refrigerants that are either a liquid or a gas at room temperature. For all refrigerants, the sample for water analysis shall be taken from the liquid phase of the container to be tested.

5.4.2 *Limits.* The value for water content shall be expressed in parts per million (ppm) by weight and shall not exceed the maximum specified in Tables 1A, 1B, 1C, 2A, 2B, and 3.

5.5 *Conductivity.* (Alternative to chloride and acidity tests).

5.5.1 *Method.* A refrigerant may be tested for conductivity as an indication of the presence of acids, metal chlorides, and any compound that ionizes in water. This alternative procedure is intended for use with new or reclaimed refrigerants, however, significant amounts of oil can interfere with the test results.

5.5.2 *Limits.* The value for conductivity shall be converted to and expressed in ppm by weight calculated as HCl and shall be compared with the maximum acidity value specified (see in Tables 1A, 1B, 1C, 2A, 2B, and 3). If the conductivity is above this amount, then the chloride and acidity tests shall be conducted. If the conductivity is not greater than this amount, then the chloride and acidity tests may be omitted.

5.6 *Chloride.* The refrigerant shall be tested for chloride as an indication of the presence of hydrochloric acid and/or metal chlorides. The referee procedure is intended for use with new or reclaimed halogenated refrigerants; however, high boiling residue in excess of the amounts in Tables 1A, 1B, 1C, 2A, 2B, and 3 can interfere with the test results.

5.6.1 *Method.* The test method shall be that described in *Appendix C to AHRI Standard 700–2015.* The test will show noticeable turbidity at chloride levels of about 3 ppm or greater by weight.

5.5.2 *Limits.* The results of the test shall not exhibit any sign of turbidity. Report the results as ''pass'' or ''fail.''

5.7 *Acidity.*

5.7.1 *Method.* The acidity test uses the titration principle to detect any compound that is soluble in water and ionizes as an acid. The test method shall be that described in *Appendix C to AHRI Standard 700–2015.* This test may not be suitable for determination of high molecular weight organic acids; however these acids will be found in the high boiling residue test outlined in Section 5.8. The test requires a 50 to 60 gram sample and has a detection limit of 0.1 ppm by weight calculated as HCl.

5.7.2 *Limits.* The value for acidity shall be expressed in ppm by weight as HCl and shall not exceed the limits in Tables 1A, 1B, 2A, 2B, and 3.

5.8 *High Boiling Residue.*

5.8.1 *Method.* High boiling residue shall be determined by either volume or weight. The volume method measures the residue from a standard volume of refrigerant after evaporation. The gravimetric method is described in Appendix C to AHRI Standard 700–2015. Oils and/or organic acids will be captured by these methods.

5.8.2 *Limits.* The value for high boiling residue shall be expressed as a percentage by volume or weight and shall not exceed the maximum percent specified in Tables 1A, 1B, 1C, 2A, 2B, and 3.

5.9 *Particulates and Solids.*

5.9.1 *Method.* A measured amount of sample shall be placed in a Goetz bulb under controlled temperature conditions. The particulates/solids shall be determined by visual examination of the Goetz bulb prior to the evaporation of refrigerant. For details of this test method, refer to Part 3 of *Appendix C to AHRI Standard 700–2015.*

Note: R–744 will partially sublimate when measuring a known amount of liquid sample into the dry Goetz bulb and the solid R–744 will interfere with the visual examination of particulates/solids. Determining the particulates/solids shall be completed by visual examination of the Goetz bulb after the evaporation of the refrigerant.

5.9.2 *Limits.* Visual presence of dirt, rust, or other particulate contamination is reported as ''fail.''

5.10 *Non-Condensables.*

5.10.1 *Method.* A vapor phase sample shall be used for determination of non-condensables. Non-condensable gases consist primarily of air accumulated in the vapor phase of refrigerants where the solubility of air in the refrigerant liquid phase is extremely low and air is not significant as a liquid phase contaminant. The presence of non-condensable gases may reflect poor quality control in transferring refrigerants to storage tanks and cylinders.

The test method shall be gas chromatography with a thermal conductivity detector as described in *Appendix C to AHRI Standard 700–2015.*

5.10.2 *Limits.* The maximum level of non-condensables in the vapor phase of a test sample shall not exceed the maximum at 25 °C as shown in Tables 1A, 1B, 1C, 2A, 2B, and 3.

5.11 *All Other Volatile Impurities and/or Other Refrigerants.*

5.11.1 *Method.* The amount of volatile impurities including other refrigerants in the subject refrigerant shall be determined by gas chromatography as described in *Appendix C to AHRI Standard 700–2015.*

5.11.2 *Limits.* The test sample shall not contain more than 0.5% by weight of volatile impurities including other refrigerants as shown in Tables 1A, 1B, 1C, 2A, 2B and 3.

5.12 *Total C_3, C_4 and C_5 Polyolefins in Hydrocarbon Refrigerants.*

5.12.1 *Method.* The amount of polyolefin impurities in the hydrocarbon shall be determined by gas chromatography as described in GPA STD 2177—Natural Gas Liquid Mixtures Containing Nitrogen and Carbon Dioxide.

5.12.2 *Limits.* The test sample shall not contain more than 0.05% by weight in the hydrocarbon sample as shown in Tables 1B and 2B. Report the results as ''pass'' or ''fail.''

5.13 *Sulfur Odor in Hydrocarbon Refrigerants.*

5.13.1 *Method.* The amount of sulfur containing compounds or other compounds with an odor shall be determined by ASTM method D1296, Odor of Volatile Solvents and Diluents.

5.13.2 *Limits.* The test sample paper shall not emit a residual sulfur odor as shown in Tables 1B and 2B.

Section 6. Reporting Procedure

6.1 *Reporting Procedure.* The source (manufacturer, reclaimer, or repackager) of the packaged refrigerant shall be identified. The refrigerant shall be identified by its accepted refrigerant number and/or its chemical name. Maximum allowable levels of contaminants are shown in Tables 1A, 1B, 1C, 2A, 2B, and 3. Test results shall be tabulated in a similar manner.

Table 1A. Single Component Fluorocarbon Refrigerants and their Allowable Levels of Contaminants

	Reporting Units	Reference Section	**R-11**	**R-12**	**R-13**	**R-22**	**R-23**	**R-32**	**R-113**	**R-114**
CHARACTERISTICS:										
Boiling Point[1]	°C @ 101.3 kPa°	N/A	23.7	-29.8	-81.5	-40.8	-82	-51.7	47.6	3.6
Boiling Point Range[1]	K	N/A	± 0.3	± 0.3	± 0.5	± 0.3	± 0.5	± 0.3	± 0.3	± 0.3
Critical Temperature[1]	°C	N/A	198	112	28.9	96.2	26.1	78.1	214.1	145.7
Isomer Content	% by weight	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0-1 R-133a	0-30 R-144a
VAPOR PHASE CONTAMINANTS:										
Air and Other Non-condensables, Maximum	% by volume @ 25.0 °C	5.10	N/A[2]	1.5	1.5	1.5	1.5	1.5	N/A[2]	1.5
LIQUID PHASE CONTAMINANTS:										
Water, Maximum	ppm by weight	5.4	20	10	10	10	10	10	20	10
All Other Volatile Impurities, Maximum	% by weight	5.11	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
High Boiling Residue, Maximum	% by volume or % by weight	5.8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Particulates/Solids	Pass or Fail	5.9	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean
Acidity, Maximum	ppm by weight (as HCl)	5.7	1	1	1	1	1	1	1	1
Chloride[3]	Pass or Fail	5.6	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity

Table 1A. Single Component Fluorocarbon Refrigerants and their Allowable Levels of Contaminants (continued)

	Reporting Units	Reference Section	R-115	R-116	R-123	R-124	R-125	R-134a	R-141b
CHARACTERISTICS:									
Boiling Point[1]	°C @ 101.3 kPa	N/A	-38.9	-78.2	27.8	-12	-48.1	-26.1	32
Boiling Point Range[1]	K	N/A	± 0.3	± 0.3	± 0.3	± 0.3	± 0.3	± 0.3	± 0.3
Critical Temperature[1]	°C	N/A	80	19.9	183.7	122.3	66	101.1	206.8
Isomer Content	% by weight	N/A	N/A	N/A	0-8 R-123a+ R-123b	0-5 R-124a	N/A	0-0.5 R-134	0-0.1ea R-141, R-141a
VAPOR PHASE CONTAMINANTS:									
Air and Other Non-condensables, Max.	% by volume @ 25.0 °C	5.10	1.5	1.5	N/A[2]	1.5	1.5	1.5	N/A[2]
LIQUID PHASE CONTAMINANTS:									
Water, Max.	ppm by weight	5.4	10	10	20	10	10	10	100
All Other Volatile Impurities, Max.	% by weight	5.11	0.5	0.5	0.5	0.5	0.5	0.5	0.9
High Boiling Residue, Max.	% by volume or % by weight	5.8	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Particulates/Solids	Pass or Fail	5.9	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean
Acidity, Max.	ppm by weight (as HCl)	5.7	1	1	1	1	1	1	1
Chloride[3]	Pass or Fail	5.6	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity

Table 1A. Single Component Fluorocarbon Refrigerants and their Allowable Levels of Contaminants (continued)

	Reporting Units	Reference Section	**R-142b**	**R-143a**	**R-152a**	**R-218**	**R-227ea**	**R-236fa**	**R-245fa**	**R-1233zd(E)**	**R-1234yf**	**R-1234ze(E)**
CHARACTERISTICS:												
Boiling Point[1]	°C @ 101.3 kPa	N/A	-9.2	-47.2	-24	-36.8	-16.5	-1.4	14.9	18.3	-29.4	-19
Boiling Point Range[1]	K	N/A	--	± 0.3	± 0.3	± 0.3	--	± 0.3	± 0.3	--	N/A	N/A
Critical Temperature[1]	°C	N/A	137.1	72.7	113.3	72	101.7	124.9	154.1	165.6	94.8	109.4
Isomer Content	% by weight	N/A	0-0.1ca R-142, R-142a	0-0.01 R-143	N/A	--	--	--	0-0.1ea R-245ca, R-245cb, R-245ea, R-245eb	--	N/A	0.3 R-1234ze(Z)
VAPOR PHASE CONTAMINANTS:												
Air and Other Non-condensables, Max.	% by volume @ 25.0 °C	5.10	2	1.5	1.5	1.5	1.5	1.5	N/A[2]	N/A[2]	1.5	1.5
LIQUID PHASE CONTAMINANTS:												
Water, Maximum	ppm by weight	5.4	15	10	10	10	10	10	20	20	10	10
All Other Volatile Impurities, Max.	% by weight	5.11	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
High Boiling Residue, Max.	% by volume or % by weight	5.8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Particulates/Solids	Pass or Fail	5.9	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean
Acidity, Max.	ppm by weight (as HCl)	5.7	3	1	1	1	1	1	1	1	1	1
Chloride[3]	Pass or Fail	5.6	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity

1. Boiling points, boiling point ranges, and critical temperatures, although not required, are provided for informational purposes. Refrigerant data compiled from Refprop 9.1.
2. Since R-11, R-113, R-123, R-141b, R-245fa, and R-1233zd(E) have normal boiling points near or above room temperature, non-condensable determinations are not required for these refrigerants.
3. Recognized chloride level for pass/fail is about 3 ppm.
-- Data Not Available

Table 1B. Single Component Hydrocarbon Refrigerants and their Allowable Levels of Contaminants

	Reporting Units	**R-50**	**R-170**	**R-E170**	**R-290**	**R-600**	**R-600a**	**R-601**	**R-601a**	**R-610**	**R-1150**	**R-1270**
CHARACTERISTICS:												
Boiling Point[1]	°C at 101.3 kPa	-161.5	-88.6	-24.8	-42.1	-0.5	-11.8	36.1	27.8	34.6	-103.8	-47.6
Boiling Point Range[1]	K	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5
Minimum Nominal Composition	% weight	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5
Other Allowable Impurities	% weight	N/A	N/A	N/A	2 (see footnote[2])	2 (see footnote[2])	2 (see footnote[2])	0-1 R-601a	0-1 R-601	N/A	N/A	0-1 R-290
VAPOR PHASE CONTAMINANTS[3]:												
Air and Other Non-condensables, Maximum	% by volume @ 25.0 °C	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
LIQUID PHASE CONTAMINANTS[4]:												
Sulfur Odor	Pass or Fail	No sulfur odor	No sulfur odor	No sulfur odor	No sulfur odor	No sulfur odor	No sulfur odor	No sulfur odor	No sulfur odor	No sulfur odor	No sulfur odor	No sulfur odor
High Boiling Residue, Max.	% weight	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Particulates/Solids	Pass or Fail	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean
Acidity, Max.	ppm by weight (as HCl)	1	1	1	1	1	1	1	1	1	1	1
Water, Max.	mg kg^{-1}	10	10	10	10	10	10	10	10	10	10	10
All Other Volatile Impurities, Max.	% weight	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Total C3, C4 and C5 Polyolefins, Max.	% weight	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05

1. Boiling points, boiling point ranges, although not required, are provided for informational purposes.
2. 2% of other C3 and C4 saturated hydrocarbons are allowed
3. Taken from vapor phase
4. Vaporized from liquid phase

Table 2A. Zeotropic Blends (400 Series Refrigerants) and their Allowable Levels of Contaminants

	Reporting Units	Reference Section	**R-401A**	**R-401B**	**R-402A**	**R-402B**	**R-403A**	**R-403B**	**R-404A**	**R-405**
CHARACTERISTICS:										
Refrigerant Components	N/A	N/A	R-22/ 152a/124	R-22/ 152a/124	R-125/ 290/22	R-125/ 290/22	R-290/ 22/218	R-290/ 22/218	R-125/ 143a/134a	R-22/152a/ 142b/C318
Nominal Composition	% by weight	N/A	53/13/34	61/11/28	60.0/2.0/ /38.0	38.0/2.0 /60.0	5/75/20	5/56/39	44/52/4	45/7/5.5/42. 5
Allowable Composition	% by weight	N/A	51-55/ 11.5-13.5/ 33-35	59-63/ 9.5-11.5/ 27-29	58.0-62.0/ 1.0-2.1/ 36.0-40.0	36.0-40.0/ 1.0-2.1/ 58.0-62.0	3-5.2/ 73-77/ 18-22	3-5.2/ 54-58/ 37-41	42-46/ 51-53/ 2-6	43-47/ 6-8/ 4.5-6.5/ 40.5-44.5
Bubble Point[1]	°C @ 101.3 kPa	N/A	-33.3	-34.9	-49	-47	-47.8	-49.2	-46.2	-32.9
Dew Point[1]	°C @ 101.3 kPa	N/A	-26.4	-28.8	-46.9	-44.7	-44.3	-46.8	-45.5	-24.5
Critical Temperature[1]	°C	N/A	105.3	103.5	76	83	87	79.7	72.1	106
VAPOR PHASE CONTAMINANTS:										
Air and Other Non-condensables, Max.	% by volume @ 25.0 °C	5.10	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
LIQUID PHASE CONTAMINANTS:										
Water, Max.	ppm by weight	5.4	10	10	10	10	10	10	10	10
All Other Volatile Impurities, Max.	% by weight	5.11	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
High Boiling Residue, Max.	% by volume or % by weight	5.8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Particulates/Solids	Pass or Fail	5.9	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean
Acidity, Max.	ppm by weight (as HC1)	5.7	1	1	1	1	1	1	1	1
Chloride[2]	Pass or Fail	5.6	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity

Table 2A. Zeotropic Blends (400 Series Refrigerants) and their Allowable Levels of Contaminants (continued)

	Reporting Units	Reference Section	**R-406A**	**R-407A**	**R-407B**	**R-407C**	**R-407D**	**R-407E**	**R-407F**	**R-408A**
CHARACTERISTICS:										
Refrigerant Components	N/A	N/A	R-22/600a/ 142b	R-32/ 125/134a	R-32/ 125/134a	R-32/ 125/134a	R-32/ 125/134a	R-32/ 125/134a	R-32/ 125/134a	R-125/ 143a/22
Nominal Composition	% by weight	N/A	55/4/41	20/40/40	10/70/20	23/25/52	15/15/70	25/15/60	30.0/30.0/4 0.0	7/46/47
Allowable Composition	% by weight	N/A	53-57/ 3-5/ 40-42	18-22/ 38-42/ 38-42	8-12/ 68-72/ 18-22	21-25/ 23-27/ 50-54	13-17/ 13-17/ 68-72	23-27/ 13-17/ 58-62	28.0-32.0/ 28.0-32.0/ 38.0-42.0	5-9/ 45-47/ 45-49
Bubble Point[1]	°C @ 101.3 kPa	N/A	-32.7	-45.3	-46.8	-43.6	-39.5	-42.9	-46.1	-44.6
Dew Point[1]	°C @ 101.3 kPa	N/A	-23.5	-38.9	-42.5	-36.6	-32.9	-35.8	-39.7	-44.1
Critical Temperature[1]	°C	N/A	116.5	82.3	75	86	91.4	88.5	83	83.1
VAPOR PHASE CONTAMINANTS:										
Air and Other Non-condensables, Max.	% by volume @ 25.0 °C	5.10	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
LIQUID PHASE CONTAMINANTS:										
Water, Max.	ppm by weight	5.4	10	10	10	10	10	10	10	10
All Other Volatile Impurities, Max.	% by weight	5.11	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
High Boiling Residue, Max.	% by volume or % by weight	5.8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Particulates/Solids	Pass or Fail	5.9	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean
Acidity, Max.	ppm by weight	5.7	1	1	1	1	1	1	1	1
Chloride[2]	Pass or Fail	5.6	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity

Table 2A. Zeotropic Blends (400 Series Refrigerants) and their Allowable Levels of Contaminants (continued)

	Reporting Units	Reference Section	**R-409A**	**R-409B**	**R-410A**	**R-410B**	**R-411A**	**R-411B**	**R-412A**	**R-413A**
CHARACTERISTICS:										
Refrigerant Components	N/A	N/A	R-22/ 124/142b	R-22/ 124/142b	R-32/125	R-32/125	R-1270/ 22/152a	R-1270/ 22/152a	R-22/218/ 142b	R-218/ 134a/600a
Nominal Composition	% by weight	N/A	60/25/15	65/25/10	50/50	45/55	1.5/87.5/ 11.0	3/94/3	70/5/25	9/88/3
Allowable Composition	% by weight	N/A	58-62/ 23-27/ 14-16	63-67/ 23-27/ 9-11	48.5-50.5/ 49.5-51.5	44-46/ 54-56	0.5-1.5/ 87.5-89.5/ 10-11	2-3/94-96/ 2-3	68-72/ 3-7/ 24-26	8-10/ 86-90/ 2-3
Bubble Point[1]	°C @ 101.3 kPa	N/A	-34.7	-35.6	-51.4	-51.3	-39.5	-41.6	-38	-30.6
Dew Point[1]	°C @ 101.3 kPa	N/A	-26.4	-27.9	-51.4	-51.6	-36.6	-40	-28.7	-27.9
Critical Temperature[1]	°C	N/A	106.9	106.9	71.4	70.8	99.1	96	107.2	98.5
VAPOR PHASE CONTAMINANTS:										
Air and Other Non-condensables, Max.	% by volume @ 25.0 °C	5.10	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
LIQUID PHASE CONTAMINANTS:										
Water, Maximum	ppm by weight	5.4	10	10	10	10	10	10	10	10
All Other Volatile Impurities, Max.	% by weight	5.11	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
High Boiling Residue, Max.	% by volume or % by weight	5.8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Particulates/Solids	Pass or Fail	5.9	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean
Acidity, Max.	ppm by weight (as HCl)	5.7	1	1	1	1	1	1	1	1
Chloride[2]	Pass or Fail	5.6	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity

Table 2A. Zeotropic Blends (400 Series Refrigerants) and their Allowable Levels of Contaminants (continued)

	Reporting Units	Reference Section	**R-414A**	**R-414B**	**R-415A**	**R-415B**	**R-416A**	**R-417A**	**R-417B**
CHARACTERISTICS:									
Refrigerant Components	N/A	N/A	R-22/124/ 600a/142b	R-22/124/ 600a/142b	R-22/152a	R-22/152a	R-134a/ 124/600	R-125/ 134a/600	R-125/ 134a/600
Nominal Composition	% by weight	N/A	51.0/28.5/ 4.0/16.5	50.0/39.0/ 1.5/9.5	82.0/18.0	25.0/75.0	59.0/39.5/ 1.5	46.6/50.0/ 3.4	79.0/18.3/ 2.7
Allowable Composition	% by weight	N/A	49.0-53.0/ 26.5-30.5/ 3.5-4.5/ 15.5-17.0	48.0-52.0/ 37.0-41.0/ 1.0-2.0/ 8.5-10.0	81.0-83.0/ 17.0-19.0	24.0-26.0/ 74.0-76.0	58.0-59.5/ 39.0-40.5/ 1.3-1.6	45.5-47.7/ 49.0-51.0/ 3.0-3.5	78.0-80.0/ 17.3-19.3/ 2.2-2.8
Bubble Point[1]	°C @ 101.3 kPa	N/A	-34	-32.9	-37.5	-27.7	-23.4	-38	-44
Dew Point[1]	°C @ 101.3 kPa	N/A	-25.8	-24.3	-34.7	-26.2	-21.8	-32.9	-41.5
Critical Temperature[1]	°C	N/A	110.7	111	100	111.3	108.2	89.9	75.2
VAPOR PHASE CONTAMINANTS:									
Air and Other Non-condensables, Max.	% by volume @ 25.0 °C	5.10	1.5	1.5	1.5	1.5	1.5	1.5	1.5
LIQUID PHASE CONTAMINANTS:									
Water, Max.	ppm by weight	5.4	10	10	10	10	10	10	10
All Other Volatile Impurities, Max.	% by weight	5.11	0.5	0.5	0.5	0.5	0.5	0.5	0.5
High Boiling Residue, Max.	% by volume or % by weight	5.8	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Particulates/Solids	Pass or Fail	5.9	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean
Acidity, Max.	ppm by weight (as HC1)	5.7	1	1	1	1	1	1	1
Chloride[2]	Pass or Fail	5.6	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity

Table 2A. Zeotropic Blends (400 Series Refrigerants) and their Allowable Levels of Contaminants (continued)											
	Reporting Units	Reference Section	**R-417C**	**R-418A**	**R-419A**	**R-419B**	**R-420A**	**R-421A**	**R-421B**	**R-422A**	**R-422B**
CHARACTERISTICS:											
Refrigerant Components	N/A	N/A	R-125/ 134a/600	R-290/ 22/152a	R-125/ 134a/ E170	R-125/ 134a/E17 0	R-134a/ 142b	R-125/ 134a	R-125/ 134a	R-125/ 134a/600 a	R-125/ 134a/600 a
Nominal Composition	% by weight	N/A	19.5/78.8/ 1.7	1.5/96.0/ 2.5	77.0/19.0/ 4.0	48.5/48.0/ 3.5	88.0/12.0	58.0/42.0	85.0/15.0	85.1/11.5 /3.4	55.0/42.0 /3.0
Allowable Composition	% by weight	N/A	18.5-20.5/ 77.8-79.8/ 1.2-1.8	1.0-2.0/ 95.0-97.0/ 2.0-3.0	76.0-78.0/ 18.0-20.0/ 3.0-5.0	47.5-49.5/ 47.0-49.0/ 3.0-4.0	88.0-89.0/ 11.0-12.0	57.0-59.0/ 41.0-43.0	84.0-86.0/ 14.0-16.0	84.1-86.1/ 10.5-12.5/ 3.0-3.5	54.0-56.0/ 41.0-43.0/ 2.5-3.1
Bubble Point[1]	°C @ 101.3 kPa	N/A	-32.7	-41.2	-42.6	-37.4	-25	-40.8	-45.7	-46.5	-40.5
Dew Point[1]	°C @ 101.3 kPa	N/A	-29.2	-40.1	-36	-31.5	-24.2	-35.5	-42.6	-44.1	-35.6
Critical Temperature[1]	°C	N/A	95.4	96.7	79.1	90.4	105.4	78.5	69	71.7	85.7
VAPOR PHASE CONTAMINANTS:											
Air and Other Non-condensables, Max.	% by volume @ 25.0 °C	5.10	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
LIQUID PHASE CONTAMINANTS:											
Water, Max.	ppm by weight	5.4	10	10	10	10	20	10	10	10	10
All Other Volatile Impurities, Max.	% by weight	5.11	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
High Boiling Residue, Max.	% by volume or % by weight	5.8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Particulates/Solids	Pass or Fail	5.9	Visually clean	Visually clean	Visually Clean	Visually clean	Visually clean	Visually Clean	Visually clean	Visually clean	Visually clean
Acidity, Max.	ppm by weight (as HC1)	5.7	1	1	1	1	1	1	1	1	1
Chloride[2]	Pass or Fail	5.6	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity

Table 2A. Zeotropic Blends (400 Series Refrigerants) and their Allowable Levels of Contaminants (continued)											
	Reporting Units	Reference Section	**R-422C**	**R-422D**	**R-422E**	**R-423A**	**R-424A**	**R-425A**	**R-426A**	**R-427A**	**R-428A**
CHARACTERISTICS:											
Refrigerant Components	N/A	N/A	R-125/ 134a/600a	R-125/ 134a/600a	R-125/ 134a/600a	R-134a /227ca	R-125/ 134a/600a/ 600/601a	R-32/134a /227ca	R-125/134a /600/601a	R-32/125/ 143a/134a	R-125 /143a /290/600a
Nominal Composition	% by weight	N/A	82.0/15.0 /3.0	65.1/30.5 /3.4	58.0/39.3 /2.7	52.5/47.5	50.5/47.0 /0.9/1.0/0.6	18.5/69.5 /12.0	5.1/93.0 /1.3/0.6	15.0/25.0 /10.0/50.0	77.5/20.0 /0.6/1.9
Allowable Composition	% by weight	N/A	81.0-83.0/ 14.0-16.0/ 2.5-3.1	64.0-66.0/ 30.5-32.5/ 3.0-3.5	57.0-59.0/ 38.0-41.0/ 2.5-3.0	51.5-53.5/ 46.5-48.5	49.5-51.5/ 46.0-48.0/ 0.7-1.0/ 0.8-1.1/ 0.4-0.7	18.0-19.0/ 69.0-70.0/ 11.5-12.5	4.1-6.1/ 92.0-94.0/ 1.1-1.4/ 0.4-0.7	13.0-17.0/ 23.0-27.0/ 8.0-12.0/ 48.0-52.0	76.5-78.5 /19.0-21.0 /0.4-0.7 /1.7-2.0
Bubble Point[1]	°C @ 101.3 kPa	N/A	-45.3	-43.2	-41.8	-24.2	-39.1	-38.1	-28.5	-43	-48.3
Dew Point[1]	°C @ 101.3 kPa	N/A	-42.3	-38.4	-36.4	-23.5	-33.3	-31.3	-26.7	-36.3	-47.5
Critical Temperature[1]	°C	N/A	76.1	79.6	82.2	99	87.5	93.9	100.2	85.3	69
VAPOR PHASE CONTAMINANTS:											
Air and Other Non-condensables, Max.	% by volume @ 25.0 °C	5.10	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
LIQUID PHASE CONTAMINANTS:											
Water, Max.	ppm by weight	5.4	10	10	20	10	10	10	10	10	10
All Other Volatile Impurities, Max.	% by weight	5.11	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
High Boiling Residue, Max.	% by volume or % by weight	5.8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Chloride[2]	Pass or Fail	5.6	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity

Table 2A. Zeotropic Blends (400 Series Refrigerants) and their Allowable Levels of Contaminants (continued)

	Reporting Units	Reference Section	**R-429A**	**R-430A**	**R-431A**	**R-434A**	**R-435A**	**R-437A**	**R-438A**	**R-439A**	**R-440A**
CHARACTERISTICS:											
Refrigerant Components	N/A	N/A	R-E170 /152a/ 600a	R-152a/ 600a	R290 /152a	R-125/ 143a/134a/ 600a	R-E170 /152a	R-125/ 134a/600 /601	R-32/125/ 134a/600 /601a	R-32/ 125/ 600a	R-290/ 134a/152a
Nominal Composition	% by weight	N/A	60.0/10.0 /30.0	76.0/24.0	71.0/29.0	63.2/18.0 /16.0/2.8	80.0/20.0	19.5/78.5 /1.4/0.6	8.5/45.0/ 44.2/1.7 /0.6	50/47.0 /3.0	0.6/1.6/ 97.8
Allowable Composition	% by weight	N/A	59.0-61.0 /9.0-11.0 /29.031.0	75.0-77.0 /23.025.0	70.0-72.0 /28.0-30.0	62.2-64.2 /17.0-19.0 /15.0-17.0 /2.6-2.9	79.0-81.0 /19.0-21.0	17.7-20.0 /77.8-80.0 /1.2-1.5 /0.4-0.7	7.0-9.0 /43.5-46.5 /42.7-45.7 /1.5-1.8 /0.4-0.7	49.0-51.0 /46.0-48.0 /2.5-3.5	0.5-0.7 /1.0-2.2 /97.3-98.3
Bubble Point[1]	°C @ 101.3 kPa	N/A	-25.5	-27.6	-43.2	-45.1	-26	-32.9	-43	-52	-25.5
Dew Point[1]	°C @ 101.3 kPa	N/A	-24.9	-27.4	-43.2	-42.4	-25.8	-29.2	-36.4	-51.7	-24.3
Critical Temperature[1]	°C	N/A	123.5	107	100.3	75.6	125.2	95.3	84.2	72	112.9
VAPOR PHASE CONTAMINANTS:											
Air and Other Non-condensables, Max.	% by volume @ 25.0 °C	5.10	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
LIQUID PHASE CONTAMINANTS:											
Water, Maximum	ppm by weight	5.4	10	10	20	20	10	10	20	10	10
All Other Volatile Impurities, Max.	% by weight	5.11	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
High Boiling Residue, Max.	% by volume or % by weight	5.8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Particulates/Solids	Pass or Fail	5.9	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean
Acidity, Max.	ppm by weight (as HC1)	5.7	1	1	1	1	1	1	1	1	1
Chloride[2]	Pass or Fail	5.6	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity

Table 2A. Zeotropic Blends (400 Series Refrigerants) and their Allowable Levels of Contaminants (continued)

	Reporting Units	Reference Section	R-442A	R-444A	R-444B	R-445A	R-446A	R-447A	R-448A	R-449A	R-450A
CHARACTERISTICS:											
Refrigerant Components	N/A	N/A	R-32/125/134a/152a/227ea	R-32/152a/1234ze(E)	R-32/152a/1234ze(E)	R-744/134a/1234ze(E)	R-32/1234ze(E)/600	R-32/125/1234ze(E)	R-32/125/1234yf / 134a/1234ze(E)	R-32/125/1234yf/134a	R-134a / 1234ze(E)
Nominal Composition	% by weight	N/A	31.0/31.0/30.0/3.0/5.0	12.0/5.0/83.0	41.5/10.0/48.5	6.0/9.0/85.0	68.0/29.0/3.0	68.0/3.5/28.5	26.0/26.0/20.0/21.0/ 7.0	24.3/24.7/25.3/25.7	42.0/58.0
Allowable Composition	% by weight	N/A	30.0-32.0/30.0-32.0/29.0-31.0/2.5-3.5/4.0- 6.0	11.0-13.0/4.0-6.0/81.0-85.0	40.5-42.5/9.0-11.0/47.5-49.5	5.0-7.0/8.0-10.0/83.0-87.0	67.0-68.5/28.4-31.0/2.0-3.1	67.5-69.5/3.0-5.0/27.5-29.5	24.0-26.5/25.5-28.0/18.0-20.5/20.0-23.0/5.0-7.5	23.3-24.5/24.5-25.7/24.3-25.5/25.5-26.7	40.0-44.0/56.0-60.0
Bubble Point[1]	°C @ 101.3 kPa	N/A	-46.5	-34.3	-44.6	-50.3	-49.4	-49.3	-45.9	-46	-23.4
Dew Point[1]	°C @ 101.3 kPa	N/A	-39.9	-24.3	-34.9	-23.5	-42.1	-44.2	-39.8	-39.9	-22.8
Critical Temperature[1]	°C	N/A	82.4	103.2	91.5	98	84.2	82.6	81.6	81.5	104.4
VAPOR PHASE CONTAMINANTS:											
Air and Other Non-condensables, Max.	% by volume @ 25.0 °C	5.10	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
LIQUID PHASE CONTAMINANTS:											
Water, Maximum	ppm by weight	5.4	10	10	10	10	10	10	10	10	10
All Other Volatile Impurities, Max.	% by weight	5.11	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
High Boiling Residue, Max.	% by volume or % by weight	5.8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Particulates/Solids	Pass or Fail	5.9	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean
Acidity, Max.	ppm by weight (as HCl)	5.7	1	1	1	1	N/A	1	1	1	1
Chloride[2]	Pass or Fail	5.6	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity

1. Bubble points, dew points, and critical temperatures, although not required, are provided for informational purposes. Refrigerant data compiled from Refprop 9.1.
2. Recognized chloride level for pass/fail is about 3 ppm.

Table 2B. Hydrocarbon Blends (400 & 500 Series Refrigerants) and their Allowable Levels of Contaminants

	Reporting Units	Reference Section	**R-432A**	**R-433A**	**R-433B**	**R-433C**	**R-436A**	**R-436B**	**R-441A**	**R-443A**
CHARACTERISTICS:										
Refrigerant Components	N/A	N/A	R-1279/ E170	R-1270/ 290	R-1270/ 290	R-1270/ 290	R-290/ 600a	R-290/ 600a	R-170/ 290/600a/600	R-1270/ 290/600a
Nominal Composition	% by weight	N/A	80.0/20.0	30.0/70.0	5.0/95.0	25.0/75.0	56.0/44.0	52.0/48.0	3.1/54.8/6.0/36.1	55.0/40.0/5.0
Allowable Composition	% by weight	N/A	79.0-81.0 /19.0-21.0	29.0-31.0 /69.0-71.0	4.0-6.0 /94.0- 96.0	24.0-26.0 /74.0-76.0	55.0-57.0 /43.0-45.0	51.0-53.0 /47.0- 49.0	2.8-2.4/52.8-56.8/ 5.4-6.6/ 34.1-38.1	53.0-57.0/ 38.0-42.0 /3.8-6.2
Bubble Point[1]	°C @ 101.3 kPa	N/A	-45.2	-44.4	-42.5	-44.1	-34.3	-33.3	-41.5	-45.2
Dew Point[1]	°C @ 101.3 kPa	N/A	-42.4	-44	-42.4	-43.7	-26.1	-25	-20.3	-42.1
Critical Temperature[1]	°C	N/A	97.3	94.4	96.3	94.8	115.9	117.4	117.3	95.1
VAPOR PHASE CONTAMINANTS[2]:										
Air and Other Non-condensables, Max.	% by volume @ 25.0°C	5.10	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
LIQUID PHASE CONTAMINANTS[3]:										
Sulfur Odor[4]	No odor to pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
High Boiling Residue, Max.	% by volume or % by weight	5.8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Particulates/Solids	Pass or Fail	5.9	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean
Acidity, Max.	ppm by weight	5.7	1	1	1	1	1	1	1	N/A
Water, Max.	ppm by weight	5.4	20	10	10	10	10	10	10	10
All Other Volatile Impurities, Max.	% by weight	5.11	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Total C3, C4 and C5 Polyolefins, Max.	% by weight	5.12	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Chloride[2]	Pass or Fail	5.6	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	N/A	N/A

1. Bubble points, dew points, and critical temperatures, although not required, are provided for informational purposes. Refrigerant data compiled from Refprop 9.1.
2. Taken from vapor phase
3. Vaporized from liquid phase
4. Including hydrogen sulphide and mercaptans

Table 3. Azeotropic Blends (500 Series Refrigerants) and their Allowable Levels of Contaminants

	Reporting Units	Reference Section	R-500	R-502	R-503	R-507A	R-508A	R-508B	R-509A	R-510A	R-511A	R-512A
CHARACTERISTICS:												
Refrigerant Components	N/A	N/A	R-12/152a	R-22/115	R-23/13	R-125/ 143a	R-23/116	R-23/116	R-22/218	R-E170/ 600a	R-290/ E170	R-134a/ 152a
Nominal Composition	% by weight	N/A	73.8/26.2	48.8/51.2	40.1/59.9	50/50	39/61	46/54	44/56	88.0/12.0	95.0/5.0	5.0/95.0
Allowable Composition	% by weight	N/A	72.8-74.8 /25.2-27.2	44.8-52.8 /47.2-55.2	39-41 /59-61	49.5-51.5 /48.5-50.5	37-41 /59-63	44-48 /52-56	42-46 /56-60	87.5-88.5 /11.5- 12.5	94.0-96.0 /4.0-6.0	4.0-6.0 /94.0-96.0
Bubble Point[1]	°C @ 101.3 kPa	N/A	-33.6	-45.2	-87.8	-46.7	-87.4	-87	-49.8	-24.9	-42	-24
Dew Point[1]	°C @ 101.3 kPa	N/A	-33.6	-45	-87.8	-46.7	-87.4	-87	-48.1	-24.9	-42	-24
Critical Temperature[1]	°C	N/A	102.1	80.2	18.4	70.6	10.8	11.8	68.6	125.7	97	112.9
VAPOR PHASE CONTAMINANTS:												
Air and Other Non-condensables, Max.	% by volume @ 25 °C	5.10	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
LIQUID PHASE CONTAMINANTS:												
Water, Maximum	ppm by weight	5.4	10	10	10	10	10	10	10	20	20	10
All Other Volatile Impurities, Max.	% by weight	5.11	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
High Boiling Residue, Max.	% by volume or % by weight	5.8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Particulates/Solids	Pass or Fail	5.9	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean	Visually clean
Acidity, Max.	ppm by weight	5.7	1	1	1	1	1	1	1	1	1	1
Chloride[2]	Pass or Fail	5.6	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity	No visible turbidity

1. Bubble points, dew points, and critical temperatures, although not required, are provided for informational purposes. Refrigerant data compiled from Refprop 9.1.
2. Recognized chloride level for pass/fail is about 3 ppm.

APPENDIX A. REFERENCES—NORMATIVE

Listed here are all standards, handbooks, and other publications essential to the formation and implementation of the standard. All references in this appendix are considered as part of this standard.

ASHRAE Terminology, https://www.ashrae.org/resources--publications/free-resources/ashrae-terminology, 2014, American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc.

ANSI/ASHRAE Standard 34–2013, *Designation and Safety Classification of Refrigerants,* with Addenda, American National Standards Institute/American Society of Heating, Refrigerating, and Air-Conditioning Engineers.

Appendix C to AHRI Standard 700–2015: Analytical Procedures for AHRI Standard 700–2015, Normative, Specification for Fluorocarbon Refrigerants, 2008. Air-Conditioning, Heating, and Refrigeration Institute.

ASTM Standard D1296–01–2012, *Standard Test Method for Odor of Volatile Solvents and Diluents,* 2012, ASTM International.

GPA STD–2177, *Analysis of Natural Gas Liquid Mixtures Containing Nitrogen and Carbon Dioxide by Gas Chromatography,* 2013, Gas Processors Association.

REFPROP Reference Fluid Thermodynamic and Transport Properties *NIST Standard Reference Database 23 version 9.1,* 2013, U.S. Department of Commerce, Technology Administration, National Institute of Standards and Technology.

APPENDIX A. REFERENCES—INFORMATIVE

Listed here are standards, handbooks, and other publications which may provide useful information and background but are not considered essential.

2012 *Appendix D Gas Chromatograms for AHRI Standard 700–2015—Informative, Specification for Fluorocarbon Refrigerants,* 2012, Air-Conditioning, Heating, and Refrigeration Institute.

■ 15. Amend subpart F by adding appendix B3 to read as follows:

APPENDIX B3 TO SUBPART F OF PART 82—PERFORMANCE OF REFRIGERANT RECOVERY, RECYCLING, AND/OR RECLAIM EQUIPMENT

This appendix is based on the Air-Conditioning, Heating, and Refrigeration Institute Standard 740–2015, *Performance Rating of Refrigerant Recovery Equipment and Recovery/Recycling Equipment.*

Section 1. Purpose

1.1 *Purpose.* The purpose of this standard is to establish methods of testing for rating and evaluating the performance of refrigerant recovery, and/or recycling equipment and general equipment requirements (herein referred to as ''equipment'') for contaminant or purity levels, capacity, speed and purge loss to minimize emission into the atmosphere of designated refrigerants.

Section 2. Scope

2.1 *Scope.* This standard applies to equipment for recovering and/or recycling single refrigerants, azeotropes, zeotropic blends, and their normal contaminants from refrigerant systems. This standard defines the test apparatus, test gas mixtures, sampling procedures and analytical techniques that will be used to determine the performance of refrigerant recovery and/or recycling equipment (hereinafter, ''equipment''). Appendix B4 of this subpart establishes standards for recovery/recycling equipment used with flammable refrigerants.

Section 3. Definitions

3.1 *Definitions.* All terms in this appendix will follow the definitions in § 82.152 unless otherwise defined in this appendix.

3.2 *Clearing Refrigerant.* Procedures used to remove trapped refrigerant(s) from equipment before switching from one refrigerant to another.

3.3 *High Temperature Vapor Recovery Rate.* For equipment having at least one designated refrigerant (see Section 11.2) with a boiling point in the range of −50 to +10 °C, the rate will be measured for R–22, or the lowest boiling point refrigerant if R–22 is not a designated refrigerant.

3.4 *Published Ratings.* A statement of the assigned values of those performance characteristics, under stated rating conditions, by which a unit may be chosen to fit its application. These values apply to all units of like nominal size and type (identification) produced by the same manufacturer. As used herein, the term ''published rating'' includes the rating of all performance characteristics shown on the unit or published in specifications, advertising, or other literature controlled by the manufacturer, at stated rating conditions.

3.5 *Push/Pull Method.* The push/pull refrigerant recovery method is defined as the process of transferring liquid refrigerant from a refrigeration system to a receiving vessel by lowering the pressure in the vessel and raising the pressure in the system, and by connecting a separate line between the system liquid port and the receiving vessel.

3.6 *Recycle Flow Rate.* The amount of refrigerant processed divided by the time elapsed in the recycling mode. For equipment which uses a separate recycling sequence, the recycle rate does not include the recovery rate (or elapsed time). For equipment which does not use a separate recycling sequence, the recycle rate is a rate based solely on the higher of the liquid or vapor recovery rate, by which the contaminant levels were measured.

3.7 *Residual Trapped Refrigerant.* Refrigerant remaining in equipment after clearing refrigerant.

3.8 *Shall, Should, Recommended* or *It Is Recommended* shall be interpreted as follows:

3.8.1 *Shall.* Where ''shall'' or ''shall not'' is used for a provision specified, that provision is mandatory if compliance with this appendix is claimed.

3.8.2 *Should, Recommended* or *It Is Recommended* is used to indicate provisions which are not mandatory but which are desirable as good practice.

3.9 *Standard Contaminated Refrigerant Sample.* A mixture of new or reclaimed refrigerant and specified quantities of identified contaminants which constitute the mixture to be processed by the equipment under test. These contaminant levels are expected only from severe service conditions.

3.10 *Trapped Refrigerant.* The amount of refrigerant remaining in the equipment after the recovery or recovery/recycling operation but before clearing refrigerant.

3.11 *Vapor Recovery Rate.* The average rate that refrigerant is withdrawn from the mixing chamber between two pressures as vapor recovery rate is changing depending on the pressure. The initial condition is vapor only at saturation pressure and temperature at either 24 °C or at the boiling point at 100 kPa, whichever is higher. The final pressure condition is 10% of the initial pressure, but not lower than the equipment final recovery vacuum and not higher than 100 kPa.

Section 4. General Equipment Requirements

4.1 *Equipment Information.* The equipment manufacturer shall provide operating instructions, necessary maintenance procedures, and source information for replacement parts and repair.

4.2 *Filter Replacement.* The equipment shall indicate when any filter/drier(s) needs replacement. This requirement can be met by use of a moisture transducer and indicator light, by use of a sight glass/moisture indicator, or by some measurement of the amount of refrigerant processed such as a flow meter or hour meter. The equipment manufacturer must provide maximum quantity recycled or filter change interval in its written instructions.

4.3 *Purge of Non-Condensable.* If non-condensables are purged, the equipment shall either automatically purge non-condensables or provide an indicating means to guide the purge process. Recycling equipment must provide purge means.

4.4 *Purge Loss.* The total refrigerant loss due to purging non-condensables, draining oil, and clearing refrigerant (see Section 9.5) shall be less than 3% (by weight) of total processed refrigerant.

4.5 *Permeation Rate.* High pressure hose assemblies 5/8 in. (16 mm) nominal and smaller shall not exceed a permeation rate of 3.9 g/cm^2/yr (internal surface) at a temperature of 48.8 °C. Hose assemblies that UL recognized as having passed ANSI/UL 1963 requirements shall be accepted without testing. See Section 7.1.4.

4.6 *Clearing Trapped Refrigerant.* For equipment rated for more than one refrigerant, the manufacturer shall provide a method and instructions which will accomplish connections and clearing within 15 minutes. Special equipment, other than a vacuum pump or manifold gauge set, shall be furnished. The clearing procedure shall not rely upon the storage cylinder below saturated pressure conditions at ambient temperature.

4.7 *Temperature.* The equipment shall be evaluated at 24 °C with additional limited evaluation at 40 °C. Normal operating conditions range from 10 °C to 40 °C.

4.8 *Exemptions.* Equipment intended for recovery only shall be exempt from Sections 4.2 and 4.3.

Section 5. Contaminated Refrigerants

5.1 *Sample Characteristics.* The standard contaminated refrigerant sample shall have the characteristics specified in Table 1, except as provided in Section 5.2. Testing shall be conducted at an ambient temperature of 24 °C ±1 °C except high temperature vapor recovery shall be 40 °C ±1 °C.

5.2 *Recovery-only Testing.* Recovery equipment not rated for removal of contaminants shall be tested with new or reclaimed refrigerant.

Table 1– Standard Contaminated Refrigerant Samples

	R-11	R-12	R-13	R-22	R-23	R-113	R-114	R-123	R-124	R-134a	R-500	R-502	R-503	R-401A	R-401B	R-402A
Moisture Content: ppm by Weight of Pure Refrigerant	100	80	30	200	30	100	85	200	200	200	200	200	30	200	200	200
Particulate Content: ppm by Weight of Pure Refrigerant[1]	80	80	N/A	80	N/A	80	80	80	80	80	80	80	N/A	80	80	80
Acid Content: ppm by Weight of Pure Refrigerant[2]	100	200	N/A	100	N/A	100	100	100	100	100	200	100	N/A	100	100	100
Oil (HBR) Content: % by Weight of Pure Refrigerant	20	5	N/A	5	N/A	20	20	20	5	5	5	5	N/A	5	5	5
Viscosity/Type[3]	300/MO	150/MO	N/A	300/MO	N/A	300/MO	300/MO	300/MO	150/MO	150/MO	150/MO	150/MO	N/A	150/AB	150/AB	150/AB
Non-Condensable Gases (Air Content): % by Volume	N/A	3	3	3	3	N/A	3	N/A	3	3	3	3	3	3	3	3

Table 1 (continued) – Standard Contaminated Refrigerant Samples

	R-402B	R-404A	R-406A	R-407A	R-407B	R-407C	R-407D	R-408A	R-409A	R-410A	R-410B	R-411A	R-411B	R-417C	R-419B	R-422E	R-445A	R-507	R-508A	R-508B
Moisture Content: ppm by Weight of Pure Refrigerant	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	20	20
Particulate Content: ppm by Weight of Pure Refrigerant[1]	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	NA	NA
Acid Content: ppm by Weight of Pure Refrigerant [2]	100	100	200	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	NA	NA
Oil (HBR) Content: % by Weight of Pure Refrigerant	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	NA	NA
Viscosity/Type[3]	150/AB	150/POE	150/AB	150/POE	150/POE	150/POE	150/POE	150/MO	150/MO	150/POE	150/POE	150/MO	150/MO	150/POE	150/POE	150/POE	150/POE	150/POE	NA	NA
Non-Condensable Gases (Air Content): % by Volume	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

[1] Particulate content shall consist of inert materials and shall comply with particulate requirements in Appendix B.

[2] Acid consists of 60% oleic acid and 40% hydrochloric acid on a total number basis.

[3] POE = Polyoester, AB = Alkylbenzene, MO = Mineral Oil.

[4] NA = Not Applicable.

Section 6. Test Apparatus

6.1 *General Recommendations.* The recommended test apparatus is described in the following paragraphs. If alternate test apparatus are employed, the user shall be able to demonstrate that they produce results equivalent to the specified reference apparatus.

6.2 *Self-Contained Equipment Test Apparatus.* The apparatus, shown in Figure 1, shall consist of:

6.2.1 *Mixing Chamber.* A mixing chamber consisting of a tank with a conical-shaped bottom, a bottom port and piping for delivering refrigerant to the equipment, various ports and valves for adding refrigerant to the chamber, and stirring means for mixing.

6.2.2 *Filling Storage Cylinder.* The storage cylinder to be filled by the refrigerant transferred shall be cleaned and at the pressure of the recovered refrigerant at the beginning of the test. It will not be filled over 80%, by volume.

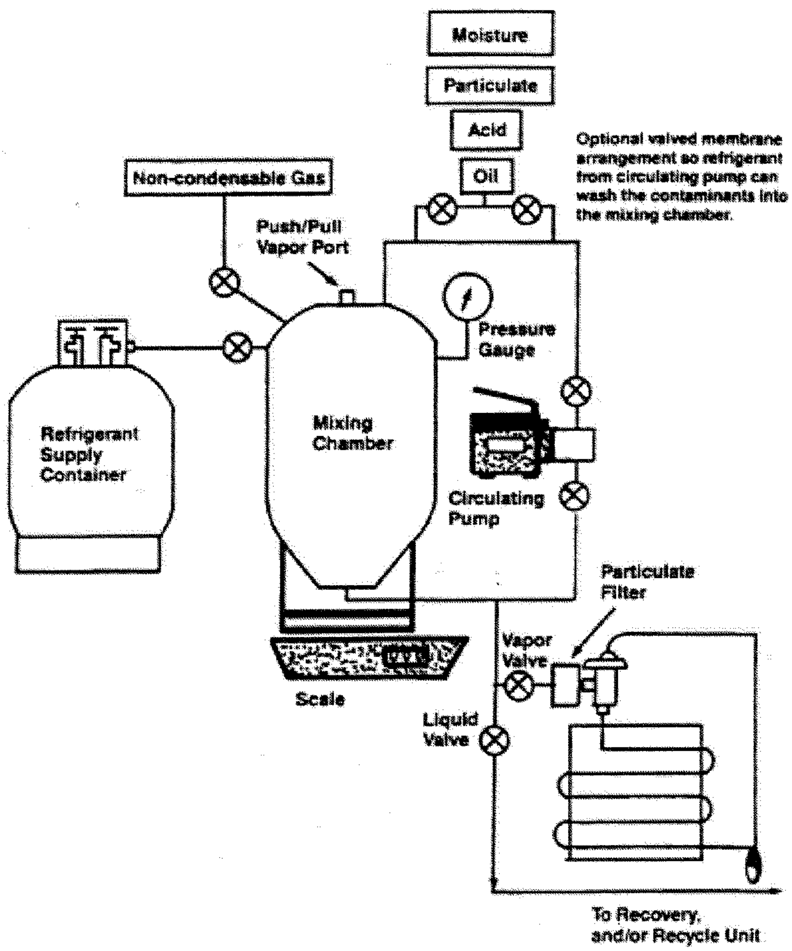
6.2.3 *Vapor Feed.* Vapor refrigerant feed consisting of evaporator, control valves and piping to create a 3.0 °C superheat condition at an evaporating temperature of 21 °C ±2 °C.

6.2.4 *Alternative Vapor Feed.* An alternative method for vapor feed shall be to pass the refrigerant through a boiler and then through an automatic pressure regulating valve set at different saturation pressures, moving from saturated pressure at 24 °C to final pressure of recovery.

6.2.5 *Liquid Feed.* Liquid refrigerant feed consisting of control valves, sampling port, and piping.

6.2.6 *Instrumentation.* Instrumentation capable of measuring weight, temperature, pressure, and refrigerant loss, as required.

Figure 1. Test Apparatus for Self-Contained Equipment



6.3 *Size.* The size of the mixing chamber and filling storage cylinder used during testing shall correspond to the size of the equipment being tested per Section 6.3.1 or 6.3.2:

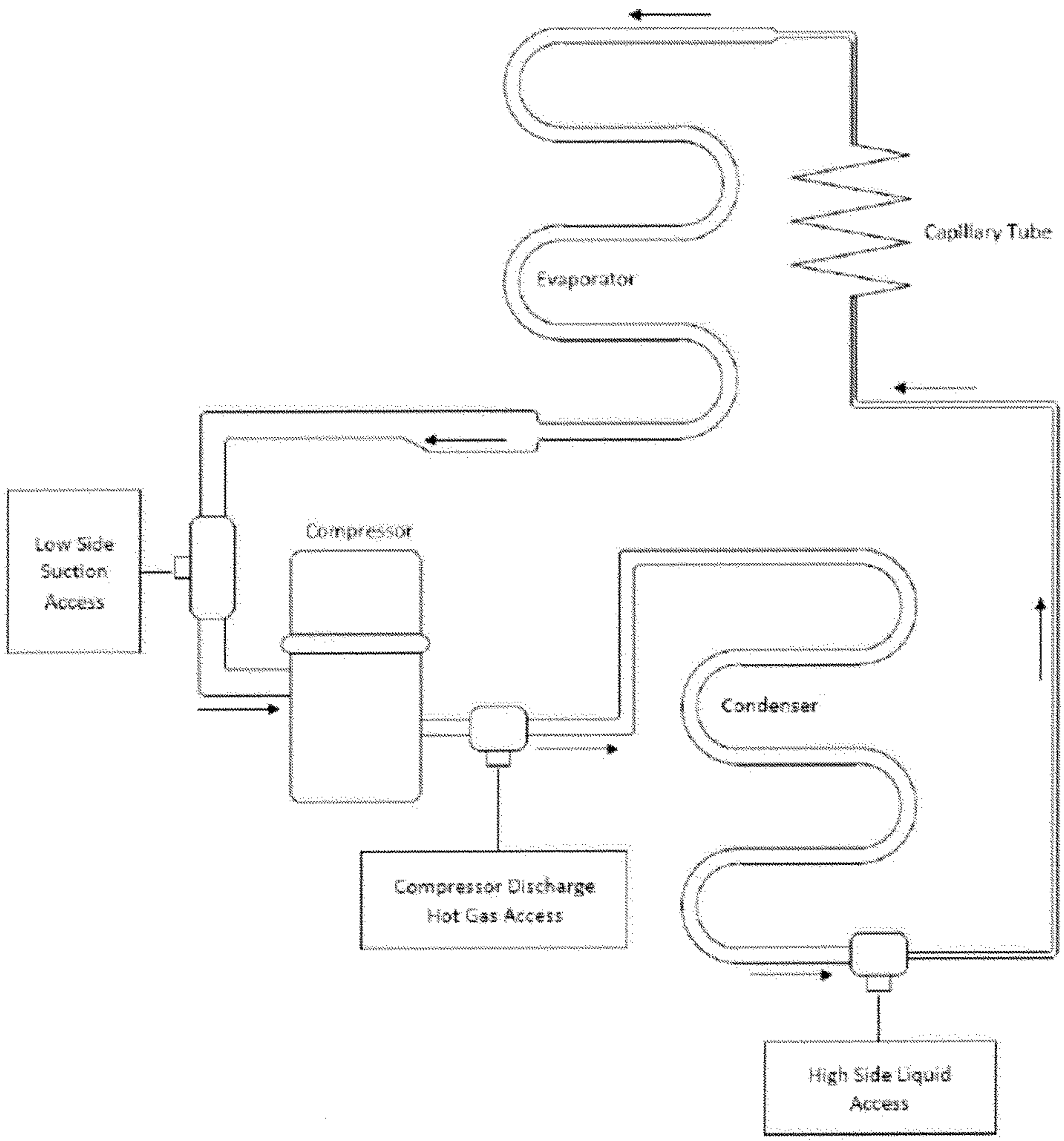
6.3.1 For equipment utilizing nominal ¼″ or ⅜″ flare ports and hoses, the mixing chamber shall be 0.09 m^3 and all ports, valves, mixing valves, and piping shall be ½″ or larger, reduced down to the port size of the equipment by fittings at the connection ports of the mixing chamber. The filling storage cylinder used during testing shall be a nominal 50-pound water capacity DOT 4Bx cylinder with ¼″ flare liquid and vapor ports.

6.3.2 For equipment utilizing ½″ or larger flare ports and hoses, the mixing chamber shall be 0.45 m^3 (or nominal 1000-pound water capacity DOT 4Bx cylinder) and all ports, valves, mixing valves, and piping shall be 1–½″ or larger, reduced down to the port size of the equipment by fittings at the connection ports of the mixing chamber. The filling storage cylinder used during testing shall be a nominal 1000-pound water capacity DOT 4Bx cylinder with liquid and vapor ports, valves and piping sized ¾″ NPT and reduced or increased to the port size of the equipment by fittings at the connection ports of the filling storage cylinder.

6.4 *System Dependent Equipment Test Apparatus.* This test apparatus is to be used for final recovery vacuum rating of all system dependent equipment.

6.4.1 *Test Setup.* The test apparatus shown in Figure 2 consists of a complete refrigeration system. The manufacturer shall identify the refrigerants to be tested. The test apparatus can be modified to facilitate operation or testing of the system dependent equipment if the modifications to the apparatus are specifically described within the manufacturer's literature. A 6.3 mm balance line shall be connected across the test apparatus between the high- and low-pressure sides, with an isolation valve located at the connection to the compressor high side. A 6.3 mm access port with a valve core shall be located in the balance line for the purpose of measuring final recovery vacuum at the conclusion of the test.

Figure 2. System Dependent Equipment Test Apparatus



Section 7. Performance Testing Procedures

7.1 *General Testing.*

7.1.1 *Temperatures.* Testing shall be conducted at an ambient temperature of 24 °C ± 1 °C except high temperature vapor recovery shall be at 40 °C ± 1 °C. The evaporator conditions of Section 6.2.3 shall be maintained as long as liquid refrigerant remains in the mixing chamber.

7.1.2 *Refrigerants.* The equipment shall be tested for all designated refrigerants (see Section 11.2). All tests in Section 7 shall be completed for each refrigerant before starting tests with the next refrigerant.

7.1.3 *Selected Tests.* Tests shall be as appropriate for the equipment type and ratings parameters selected (*see Sections 9.9, 11.1 and 11.2*).

7.1.4 *Hose Assemblies.* For the purpose of limiting refrigerant emissions to the atmosphere, hose assemblies shall be tested for permeation according to ANSI/UL Standard 1963.

7.2 *Equipment Preparation and Operation.* The equipment shall be prepared and operated per the operating instructions.

7.3 *Test Batch.* The test batch consisting of refrigerant sample (*see* Section 5) of the test refrigerant shall be prepared and thoroughly mixed. Continued mixing or stirring shall be required during the test while liquid refrigerant remains in the mixing chamber. The mixing chamber shall be filled to 80% level by volume.

7.3.1 *Control Test Batch.* Prior to starting the test for the first batch for each refrigerant, a liquid sample will be drawn from the mixing chamber and analyzed per Section 8 to assure that contaminant levels match Table 1 within ±10 ppm for moisture, ±20 ppm for oleic acid and ±0.5% for oil.

7.4 *Recovery Tests (Recovery and Recovery/Recycling Equipment)*

7.4.1 *Determining Recovery Rates.* The liquid and vapor refrigerant recovery rates shall be measured during the first test batch for each refrigerant (*see* Sections 9.1, 9.2 and 9.4). Equipment preparation and recovery cylinder changeover shall not be included in elapsed time measurements for determining vapor recovery rate and liquid refrigerant recovery rate. Operations such as subcooling the recovery cylinder shall be included. The recovery cylinder shall be the same size as per Section 6.3 or as furnished by the equipment manufacturer. Oversized tanks shall not be permitted.

7.4.1.1 *Liquid Refrigerant Recovery Rate.* If elected, the recovery rate using the liquid refrigerant feed means (*see* Section 6.2.5) shall be determined. After the equipment reaches stabilized conditions of condensing temperature and/or recovery cylinder pressure, the recovery process shall be stopped and an initial weight shall be taken of the mixing chamber (*see* Section 9.2). The recovery process shall be continued for a period of time sufficient to achieve the accuracy in Section 9.4. The recovery process shall be stopped and a final weight of the mixing chamber shall be taken.

7.4.1.2 *Vapor Refrigerant Recovery Rate.* If elected, the average vapor flow rate shall be measured to accuracy requirements in Section 9.4 under conditions with no liquid refrigerant in the mixing chamber. The liquid recovery feed means shall be used. At initial conditions of saturated vapor at the higher of 24 °C or the boiling temperature (100 kPa), the weight of the mixing chamber and the pressure shall be recorded. At final conditions representing pressure in the mixing chamber of 10% of the initial condition, but not less than the final recovery vacuum (*see* Section 9.6) nor more than 100 kPa, measure the weight of the mixing chamber and the elapsed time. At initial conditions, the recovery cylinder shall be at saturation pressure at ambient conditions.

7.4.1.3 *High Temperature Vapor Recovery Rate.* This is applicable for equipment having at least one designated refrigerant (*see* Section 11.2) with a boiling point between −50 °C and +10 °C. Measure the rate for R–22, or the refrigerant with the lowest boiling point if R–22 is not a designated refrigerant. Repeat the test in Section 7.4.1.2 at saturated conditions at 40 °C and continue to operate equipment to assure it will operate at this condition (*see* Section 7.4.3). At initial conditions, the recovery cylinder shall be at saturated pressure at 40 °C.

7.4.1.4 *Push/Pull Liquid Refrigerant Recovery Rate.* If elected, the average liquid push/pull flow rate shall be measured to accuracy requirements in Section 9.4. The mixing chamber and filling storage cylinder shall be filled with refrigerant vapor at initial conditions of saturated vapor at the higher of 24 °C or the boiling temperature at 100 kPa. An amount of liquid refrigerant shall be added to the mixing chamber equivalent to 80% by weight of the capacity of the filling storage cylinder. The pressure between the mixing chamber and filling storage cylinder shall be equalized and stabilized at initial conditions of saturated vapor at the higher of 24 °C or the boiling temperature at 100 kPa. The initial weight of the mixing chamber and the pressure shall be recorded. The equipment is then operated in push/pull recovery mode and the weight change of the mixing chamber is recorded over time until all of the liquid has been transferred.

7.4.2 *Recovery Operation.* This test is for determining the final recovery vacuum and the ability to remove contaminants as appropriate. If equipment is rated for liquid recovery (*see* Section 7.4.1.3), liquid recovery feed means described in Section 6.2.5 shall be used. If not, vapor recovery means described in Sections 6.2.3 or 6.2.4 shall be used. Continue recovery operation until all liquid is removed from the test apparatus and vapor is removed to the point where equipment shuts down by automatic means or is manually shut off per operating instructions.

7.4.2.1 *Oil Draining.* Capture oil from the equipment at intervals as required in the instructions. Record the weight of the container. Completely remove refrigerant from oil by evacuation or other appropriate means. The weight difference shall be used in Section 7.5.2.

7.4.3 *Final Recovery Vacuum.* At the end of the first test batch for each refrigerant, the liquid valve and vapor valve of the apparatus shall be closed. After waiting 1 minute, the mixing chamber pressure shall be recorded (*see* Section 9.6).

7.4.4 *Residual Refrigerant.* This test will measure the mass of remaining refrigerant in the equipment after clearing and therefore the extent of mixing different refrigerants (*see* Section 9.6).

7.4.4.1 *Initial Conditions.* At the end of the last test for each batch for each refrigerant, the equipment shall be disconnected from the test apparatus (Figure 1). Recycle per Section 7.5, if appropriate. Perform refrigerant clearing operations as called for in the instruction manual. Capture and record the weight of any refrigerant which would have been emitted to the atmosphere during the clearing process for use in Section 9.5. If two loops are used for recycling, trapped refrigerant shall be measured for both.

7.4.4.2 *Residual Trapped Refrigerant.* Evacuate an empty test cylinder to 1.0 kPa. Record the empty weight of the test cylinder. Open all valves to the equipment so as to provide access to all trapped refrigerant. Connect the equipment to the test cylinder and operate valves to recover the residual refrigerant. Record the weight of the test cylinder using a recovery cylinder pressure no less than specified in Section 6.2.2. Place the test cylinder in liquid nitrogen for a period of 30 minutes or until a vacuum of 1000 microns is reached, whichever occurs first.

7.5 *Recycling Tests (Recovery/Recycling Equipment).*

7.5.1 *Recycling Operation.* As each recovery cylinder is filled in Section 7.4.2, recycle according to operating instructions. There will not necessarily be a separate recycling sequence. Note non-condensable purge measurement in Section 9.5.

7.5.1.1 *Recycle Flow Rate.* While recycling the first recovery cylinder for each refrigerant, determine the recycling flow rate by appropriate means (*see* Section 9.3) to achieve the accuracy required in Section 9.4.

7.5.2 *Non-Condensable Sample.* After completing Section 7.4.3, prepare a second test batch (*see* Section 7.3). Recover per Section 7.4.2 until the current recovery cylinder is filled to 80% level by volume. Recycle per Section 7.5.1. Mark this cylinder and set aside for taking the vapor sample. For equipment having both an internal tank of at least 3 kg refrigerant capacity and an external recovery cylinder, two recovery cylinders shall be marked and set aside. The first is the cylinder described above. The second cylinder is the final recovery cylinder after filling it to 80% level by volume and recycling.

7.5.2.1 *Push/Pull Liquid Refrigerant Recovery Rate.* This rate shall be measured by weight change of the mixing chamber divided by elapsed time (*see* Section 7.4.1.4). The units shall be kg/min and the accuracy shall be per Section 9.4.

7.5.3 *Liquid Sample for Analysis.* Repeat steps in Sections 7.3, 7.4.2 and 7.5.1 with further test batches until indication means in Section 4.2 show the filter/drier(s) need replacing.

7.5.3.1 *Multiple Pass.* For equipment with a separate recycling circuit (multiple pass), set aside the current cylinder and draw the liquid sample (*see* Section 7.4) from the previous cylinder.

7.5.3.2 *Single Pass.* For equipment with the single pass recycling circuit, draw the liquid sample (*see* Section 7.4) from the current cylinder.

7.6 *Measuring Refrigerant Loss.* Refrigerant loss due to non-condensables shall be determined by appropriate means (*see* Section 9.5.1). The loss could occur in Sections 7.4.1, 7.4.2 and 7.5.1.

Section 8. Sampling and Chemical Analysis Methods

8.1 *Chemical Analysis.* Chemical analysis methods shall be specified in appropriate standards such as AHRI Standard 700, Appendix C to AHRI Standard 700, and Addendum 700–1 to Appendix C. If alternate test methods are employed, the laboratory must be able to demonstrate that they produce results equivalent to the specified referee method.

8.2 *Refrigerant Sampling.*

8.2.1 *Moisture Content.* The water content in refrigerant shall be measured by the Karl Fischer Coulometric Titration technique. Report the moisture level in parts per million by weight.

8.2.2 *Chloride Ions.* Chloride ions shall be measured by turbidity tests. At this time, quantitative results have not been defined. Report chloride content as ''pass'' or ''fail.'' In the future, when quantitative results are possible, report chloride content as parts per million by weight.

8.2.3 *Acid Content.* The acidity test uses the titration principle. Report the acidity in parts per million by weight (mg KOH/kg) of sample.

8.2.4 *High Boiling Residue.* High boiling residues shall use measurement of the volume of residue after evaporating a standard volume of refrigerant. Using weight measurement and converting to volumetric units is acceptable. Report high boiling residues as percent by volume.

8.2.5 *Particulates/Solids.* The particulates/solids measurement employs visual examination. Report results as ''pass'' or ''fail.''

8.2.6 *Non-condensables.* The level of contamination by non-condensable gases in the base refrigerant being recycled shall be determined by gas chromatography. Report results as percent by volume.

Section 9. Performance Calculations for Ratings

9.1 *Vapor Refrigerant Recovery Rate.* This rate shall be measured by weight change of the mixing chamber divided by elapsed time (*see* 7.4.1.2). The units shall be kg/min and the accuracy shall be per Section 9.4.

9.1.1 *High Temperature Vapor Recovery Rate.* This rate shall be measured by measured weight change of the mixing chamber divided by elapsed time (*see* Section 7.4.1.3). The units shall be kg/min and the accuracy shall be per Section 9.4.

9.2 *Liquid Refrigerant Recovery Rate.* This rate shall be measured by weight change of the mixing chamber divided by elapsed time (*see* 7.4.1.3). The units shall be kg/min and the accuracy shall be per Section 9.4.

9.3 *Recycle Flow Rate.* The recycle flow rate shall be as defined in Section 3.12, expressed in kg/min, and the accuracy shall be per Section 9.4.

9.3.1 For equipment using multi-pass recycling or a separate sequence, the recycle rate shall be determined by dividing the net weight, W, of the refrigerant to be recycled by the actual time T required to recycle. Any set-up or operator interruptions shall not be included in the time T.

9.3.2 If no separate recycling sequence is used, the recycle rate shall be the higher of the vapor refrigerant recovery rate or the liquid refrigerant recovery rate. The recycle rate shall match a process which leads to contaminant levels in Section 9.9. Specifically, a recovery rate determined from bypassing a contaminant removal device cannot be used as a recycle rate when the contaminant levels in Section 9.9 are determined by passing the refrigerant through the contaminant removal device.

9.4 *Accuracy of Flow Rates.* The accuracy of test measurements in Sections 9.1, 9.2 and 9.3 shall be ±008 kg/min for flow rates up to 0.42 kg/min and ±2.0% for flow rates larger than 0.42 kg/min. Ratings shall be expressed to the nearest 0.02 kg/min.

9.5 *Refrigerant Loss.* This calculation will be based upon the net loss of refrigerant which would have been eliminated in the non-condensable purge process (*see* Section 7.5.1), the oil draining process (*see* Section 7.4.2.1) and the refrigerant clearing process (*see* Section 7.4.4.1), all divided by the net refrigerant content of the test batches. The refrigerant loss shall not exceed 3% by weight.

9.5.1 *Non-Condensable Purge.* Evacuate an empty container to 2 kPa. Record the empty weight of the container. Place the container in a dry ice bath. Connect the equipment purge connection to the container and operate purge according to operating instructions so as to capture the non-condensables and lost refrigerant. Weigh the cylinder after the recycling is complete. Equivalent means are permissible.

For units which either recycle or list non-condensable removal, non-condensable gases are purged, operating the recycle device per the manufacturer's instructions through an evaporator pressure regulator (EPR) valve into a liquid nitrogen-chilled cylinder. This combination will simulate the atmosphere while allowing the capture of purge gases. The cylinder is weighed before and after the purge procedure.

9.5.2 *Oil Draining.* Refrigerant removed from the oil after draining shall be collected and measured in accordance with Section 7.4.2.1.

9.5.3 *Clearing Unit.* Refrigerant captured during the clearing process shall be measured in accordance with Section 7.4.4.1.

9.6 *Final Recovery Vacuum.* The final recovery vacuum shall be the mixing chamber pressure in Section 7.4.3 expressed in kPa at 24 °C. The accuracy of the measurement shall be within 0.33 kPa.

9.7 *Residual Trapped Refrigerant.* The amount of residual trapped refrigerant shall be the final weight minus the initial weight of the test cylinder in Section 7.4.4.2, expressed in kg. The accuracy shall be ±0.02 kg and reported to the nearest 0.05 kg.

9.8 *Refrigerant Processed.* The amount of refrigerant processed before changing filters (*see* Section 7.5.3) shall be expressed in kg to an accuracy of ±1%.

9.9 *Contaminant Levels.* The contaminant levels remaining after testing shall be published as follows:

Moisture content, ppm by weight
Chloride ions, pass/fail
Acid Content, ppm by weight
High boiling residue, % (by volume)
Particulates/solids, pass/fail (visual examination)
Non-condensables, % (by volume)

9.10 *Minimum Data Requirements for Published Ratings.* Published ratings shall include all of the parameters as shown in Tables 2 and 3 for each refrigerant designated by the manufacturer.

Section 10. Tolerances

10.1 *Tolerances.* Performance related parameters shall be equal to or better than the published ratings.

Section 11. Marking and Nameplate Data

11.1 *Marking and Nameplate Data.* The nameplate shall display the manufacturer's name, model designation, type of equipment (Recovery or Recovery/Recycling and Self-Contained or System Dependent), designated refrigerant(s), capacities, and electrical characteristics where applicable. The nameplate shall also conform to the labeling requirements established for certified recycling and recovery equipment established at 40 CFR 82.158(h).

Recommended nameplate voltages for 60 Hertz systems shall include one or more of the equipment nameplate voltages shown in Table 1 of ANSI/AHRI Standard 110. Recommended nameplate voltages for 50 Hertz systems shall include one or more of the utilization voltages shown in Table 1 of IEC Standard Publication 60038, *IEC Standard Voltages.*

11.2 *Data for Designated Refrigerants.* For each refrigerant designated, the manufacturer shall include all the following that are applicable per Table 2:

a. Liquid Recovery Rate, kg/min
b. Vapor Recovery Rate, kg/min
c. High Temperature Vapor Recovery Rate, kg/min
d. Push/Pull Liquid Recovery Rate, kg/min
e. Final Recovery Vacuum Level, kPa
f. Recycle Flow Rate, kg/min
g. Refrigerant Loss, kg
h. Residual Trapped Refrigerant, kg
i. Quantity of Refrigerant Processed at Rated Conditions, kg

TABLE 2—PERFORMANCE RATINGS FOR REFRIGERANT RECOVERY AND RECOVERY/RECYCLING EQUIPMENT [4,5]

Parameter	Type of equipment			
	Recovery	Recovery/recycling	Recycling	System dependent equipment
Liquid Refrigerant Recovery Rate, kg/min	X [1]	X [1]	N/A	N/A
Vapor Refrigerant Recovery Rate, kg/min	X [1]	X [1]	N/A	N/A
High Temperature Vapor Recovery Rate, kg/min	X [1]	X [1]	N/A	N/A
Push/Pull Liquid Recovery Rate, kg/min	X [1]	X [1]	N/A	N/A
Final Recovery Vacuum Level, kPa	X	X	N/A	X
Recycle Flow Rate, kg/min	N/A	X	X	N/A
Refrigerant Loss, kg	X [2]	X	X	X [3]
Residual Trapped Refrigerant, kg	X [3]	X [2]	X [2]	X [2]

TABLE 2—PERFORMANCE RATINGS FOR REFRIGERANT RECOVERY AND RECOVERY/RECYCLING EQUIPMENT [4,5]—Continued

Parameter	Type of equipment			
	Recovery	Recovery/recycling	Recycling	System dependent equipment
Quantity of Refrigerant Processed at Rated Conditions, kg	N/A	X	X	N/A

[1] For a recovery or recovery/recycle unit, one must rate either liquid refrigerant recovery rate or vapor refrigerant recovery rate or one can rate for both. If rating only one, the other shall be indicated by N/A, ''not applicable.''
[2] Mandatory rating if multiple refrigerants, oil separation or non-condensable purge are rated.
[3] Mandatory rating for equipment tested for multiple refrigerants.
[4] ''X'' denotes mandatory rating or equipment requirements.
[5] ''N/A'' indicates ''Not Applicable'' for a parameter that does not have a rating.

TABLE 3—CONTAMINANT REMOVAL RATINGS FOR REFRIGERANT RECOVERY AND RECOVERY/RECYCLING EQUIPMENT [1,2]

Contaminant	Type of equipment			
	Recovery	Recovery/recycling	Recycling	System dependent equipment
Moisture Content, ppm by weight	N/A	X	X	N/A
Chloride Ions, pass/fail	N/A	X	X	N/A
Acid Content, ppm by weight	N/A	X	X	N/A
High Boiling Residue, % by volume	N/A	X	X	N/A
Particulates/solids, pass/fail	N/A	X	X	N/A
Non-Condensables, % by volume	N/A	X	X	N/A

[1] ''X'' denotes mandatory rating.
[2] ''N/A'' indicates ''Not Applicable.''

Attachment 1 to Appendix B3 to Subpart F of Part 82—References

Listed here are all standards, handbooks, and other publications essential to the formation and implementation of the standard. All references in this appendix are considered as part of this standard.

- ANSI/UL Standard 1963, *Refrigerant Recovery/Recycling Equipment,* First Edition, 2011, American National Standards Institute/Underwriters Laboratories, Inc.
- ANSI/AHRI Standard 110–2012, *Air-Conditioning, Heating and Refrigerating Equipment Nameplate Voltages,* 2012, Air-Conditioning, Heating, and Refrigeration Institute
- AHRI Standard 700–2015, *Specifications for Refrigerants,* Air-Conditioning, Heating, and Refrigeration Institute
- *ASHRAE Terminology, https://www.ashrae.org/resources—publications/free-resources/ashrae-terminology,* 2014, American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc.
- International Standard IEC 60038, *IEC Standard Voltages,* 2009, International Electrotechnical Commission

Attachment 2 to Appendix B3 to Subpart F of Part 82—Particulate Used in Standard Contaminated Refrigerant Sample

1. Particulate Specification

B1.1 The particulate material (pm) will be a blend of 50% coarse air cleaner dust as received, and 50% retained on a 200-mesh screen. The coarse air cleaner dust is available from: AC Spark Plug Division; General Motors Corporation; Flint, Michigan.

B1.2 *Preparation of Particulate Materials.* To prepare the blend of contaminant per ASHRAE Standard 63.2, first wet screen a quantity of coarse air cleaner dust on a 200-mesh screen (particle retention 74 µm). This is done by placing a portion of the dust on a 200-mesh screen and running water through the screen while stirring the dust with the fingers. The fine contaminant particles passing through the screen are discarded. The larger than 200-mesh particles collected on the screen are removed and dried for one hour at 110 °C. The blend of standard contaminant is prepared by mixing 50% by weight of coarse air cleaner dust as received (after drying for one hour at 110 °C) with 50% by weight of the larger than 200-mesh screened dust.

B1.3 *Particle Size Analysis.* The coarse air cleaner dust as received and the blend used as the standard contaminant have the following approximate particle size analysis:

TABLE B1—WEIGHT PERCENTAGE IN VARIOUS µM SIZE RANGES FOR PARTICLE SIZE ANALYSIS

Size range (µm)	As received (wt %)	Blend (wt %)
0–5	12	6
5–10	12	6
10–20	14	7
20–40	23	11
40–80	30	32
80–200	9	38

■ 16. Amend subpart F by adding appendix B4 to read as follows:

Appendix B4 to Subpart F of Part 82—Performance and Safety of Flammable Refrigerant Recovery and/or Recycling Equipment

This appendix is based on the Air-Conditioning, Heating, and Refrigeration Institute Standard 740–2015, *Performance Rating of Refrigerant Recovery Equipment and Recovery/Recycling Equipment,* and Underwriters Laboratories Standard 1963 (Fourth Edition), *Standard for Safety: Refrigerant Recovery/Recycling Equipment,* including Supplement SB (added October 11, 2013), *Requirements for Refrigerant Recovery/Recycling Equipment Intended for Use with a Flammable Refrigerant.*

Section 1. Purpose

1.1 *Purpose.* The purpose of this standard is to establish methods of testing for rating and evaluating the performance and safety of refrigerant recovery and/or recycling equipment and general equipment requirements (herein referred to as ''equipment'') for contaminant or purity levels, capacity, speed and purge loss to minimize emission into the atmosphere of designated refrigerants, as well as safety for use with flammable refrigerants.

Section 2. Scope

2.1 *Scope.* This standard applies to equipment for recovering and/or recycling flammable single refrigerants, azeotropes, zeotropic blends, and their normal contaminants from refrigerant systems. This standard defines the test apparatus, test gas mixtures, sampling procedures, analytical techniques, and equipment construction that will be used to determine the performance and safety of refrigerant recovery and/or recycling equipment (hereinafter, ''equipment'').

Section 3. Definitions

3.1 *Definitions.* All terms in this appendix will follow the definitions in § 82.152 and Appendix B3 to Subpart F of Part 82 unless otherwise defined in this appendix.

3.2 All definitions used in Underwriters Laboratories Standard 1963 (Fourth Edition), *Standard for Safety: Refrigerant Recovery/Recycling Equipment* as applicable, are incorporated by reference.

3.3 All definitions used in Supplement SB (added October 11, 2013), *Requirements for Refrigerant Recovery/Recycling Equipment Intended for Use with a Flammable Refrigerant* in Underwriters Laboratories Standard 1963 (Fourth Edition), *Standard for Safety: Refrigerant Recovery/Recycling Equipment,* are incorporated by reference.

Section 4. Evaluation of Performance

4.1 *Performance Ratings.* All recovery and/or recycling equipment to be tested under this appendix must follow the procedures and meet all requirements established in Appendix B3 to Subpart F of Part 82 to determine the performance ratings in addition to the safety evaluation conducted under the rest of this appendix.

4.2 *Safety.* All recovery and/or recycling equipment to be tested under this appendix must follow the procedures and meet all requirements in Supplement SB (added October 11, 2013), *Requirements for Refrigerant Recovery/Recycling Equipment Intended for Use with a Flammable Refrigerant* in Underwriters Laboratories Standard 1963 (Fourth Edition), *Standard for Safety: Refrigerant Recovery/Recycling Equipment.*

■ 17. Amend subpart F by revising appendix D to read as follows:

Appendix D to Subpart F of Part 82—Standards for Becoming a Certifying Program for Technicians

a. Test Preparation

Technicians must pass an EPA-approved test, provided by an EPA-approved certifying program to be certified as a Type I technician. Organizations providing Type I certification only may choose either an on-site format or a mail-in format similar to what is permitted under the MVACs program.

Technicians must pass a closed-book, proctored test, administered in a secure environment, by an EPA-approved certifying program to be certified as a Type II or Type III technician.

Technicians must pass a closed-book, proctored test (or series of tests), administered in a secure environment, by an EPA-approved certifying program to be certified as a Universal technician. Mail-in format Type I tests cannot be used toward a Universal certification.

Each certifying program must assemble tests by choosing a prescribed subset from the EPA test bank. EPA will have a test bank with more questions than are needed for an individual test, which will enable the certifying program to generate multiple tests in order to discourage cheating. Each test must include 25 questions drawn from Group 1 and 25 questions drawn from each relevant technical Group. Tests for Universal technicians will include 100 questions (25 from Group 1 and 25 from each relevant technical Group). Universal tests may be taken all at once, or by combining passing scores on separate Type I, Type II, and Type III tests. Questions should be divided in order to sufficiently cover each topic within the Group.

Certifying programs must provide a paper hand-out or electronic form of communication to technicians after they have completed their certification test that contains the following information:

—Which certifying program is providing the testing;
—contact information for the certifying program;
—the name and contact information of the proctor; and
—when they should expect to receive their score and, if they passed, their certification card.

Each certifying program must show a method of randomly choosing which questions will be on the tests. Multiple versions of the test must be used during each testing event. Test answer sheets must include the name and address of the applicant, the name and address of the certifying program, and the date and location at which the test was administered.

Training material accompanying mail-in Type I tests must not include sample test questions mimicking the language of the certification test. All mail-in material will be subject to review by EPA.

Certifying programs may charge individuals reasonable fees for the administration of the tests. EPA will publish a list of all approved certifying programs.

b. Proctoring

A certifying program for Type I (if in-person), Type II, Type III, and Universal technicians must designate at least one proctor registered for every 50 people taking tests at the same time at a given site.

The certification test for Type I (if taken as part of a Universal certification), Type II, Type III, and Universal technicians is a closed-book exam. The proctors must ensure that the applicants for certification do not use any notes or training materials during testing. Desks or work space must be placed in a way that discourages cheating. The space and physical facilities are to be conducive to continuous surveillance by the proctors and monitors during testing.

The proctor may not receive any benefit from the outcome of the testing other than a fee for proctoring. Proctors cannot know in advance which questions are on the tests they are proctoring.

Proctors are required to verify the identity of individuals taking the test by examining photo identification. Acceptable forms of identification include but are not limited to drivers' licenses, government identification cards, passports, and military identification.

Certifying programs for Type I technicians using the mail-in format, must take sufficient measures at the test site to ensure that tests are completed honestly by each technician. Each test for Type I certification must provide a means of verifying the identification of the individual taking the test. Acceptable forms of identification include but are not limited to drivers' licenses and passports.

c. Test Security

A certifying program must demonstrate the ability to ensure the confidentiality and security of the test questions and answer keys through strict accountability procedures. An organization interested in developing a technician certification program will be required to describe these test security procedures to EPA.

After the completion of a test, proctors must collect all test forms, answer sheets, scratch paper and notes. These items are to be placed in a sealed envelope.

d. Test Content

All Type I, Type II, Type III, and Universal certification tests will include 25 questions from Group I. Group I will ask questions in the following areas:

I. Environmental impact of CFCs, HCFCs, and substitute refrigerants
II. Laws and regulations
III. Changing industry outlook

Type I, Type II and Type III certification tests will also include 25 questions from Group II. Group II will ask questions covering sector-specific issues in the following areas:

IV. Leak detection
V. Recovery Techniques
VI. Safety
VII. Shipping
VIII. Disposal

Universal certification tests will include 75 questions from Group II, with 25 from each of the three sector-specific areas. This is in addition to the 25 questions from Group I.

e. Grading

Tests must be graded objectively. Certifying programs must inform the applicant of their test results no later than 30 days from the date of the test. Type I certifying programs using the mail-in format must notify the applicants of their test results no later than 30 days from the date the certifying programs received the completed test and any required documentation.

The passing score for the closed-book Type I, Type II, Type III and Universal certification test is 70 percent. The passing score for Type I certification tests using the mail-in format is 84 percent.

f. Proof of Certification

Certifying programs must issue a standard wallet-sized identification card no later than 30 days from the date of the test. Type I certifying programs using mail-in formats must issue cards to certified technicians no later than 30 days from the date the certifying program receives the completed test and any required documentation.

Each wallet-sized identification card must include, at a minimum, the name of the certifying program including the date the certifying program received EPA approval, the name of the person certified, the type of certification, a unique number for the certified person that does not include a technician's social security number, and the following text:

[Name of person] has successfully passed a [Type I, Type II, Type III and/or Universal—as appropriate] exam on how to responsibly handle refrigerants as required by EPA's National Recycling and Emissions Reduction Program.

g. Recordkeeping and Reporting Requirements

Certifying programs must maintain records of the names and addresses of all individuals taking the tests, the scores of all certification tests administered, and the dates and locations of all tests administered. These records must be maintained indefinitely, unless transferred to another certifying program or EPA.

EPA must receive an activity report from all approved certifying programs by every January 30 and July 30, which covers the previous six months of certifications. The first report must be submitted following the first full six-month period for which the program has been approved by EPA. This report includes the pass/fail rate and testing schedules. If the certifying program believes a test bank question needs to be modified, information about that question should also be included.

Approved certifying programs will receive a letter of approval from EPA. Each testing center must display a copy of that letter at their place of business.

Approved technician certification programs that voluntarily plan to stop providing the certification test must forward all records required by this appendix and § 82.161 to another program currently approved by EPA in accordance with this appendix and with § 82.161. Approved technician certification programs that receive records of certified technicians from a program that no longer offers the certification test, and the program that is voluntarily withdrawing from being a technician certification program must inform EPA in writing at the address listed in § 82.160 within 30 days of receiving or transferring these records. The notification must include the name and address of the program to which the records have been transferred. If another currently approved program willing to accept the records cannot be located, these records must be submitted to EPA at the address listed at § 82.160.

Technician certification programs that have had their certification revoked in accordance with § 82.169 must forward all records required by this appendix and § 82.161 to EPA at the address listed in § 82.160. Failure to do so is a violation of 40 CFR part 82, subpart F.

h. Additional Requirements

EPA may periodically inspect testing sites to ensure compliance with EPA regulations. If testing center discrepancies are found, they must be corrected within a specified time period. If discrepancies are not corrected, EPA may suspend or revoke the certifying program's approval.

The inspections will include but are not limited to a review of the certifying program's provisions for test security, the availability of space and facilities to conduct the administrative requirements and ensure the security of the tests, the availability of adequate testing facilities and spacing of the applicants during testing, a review of the proper procedures regarding accountability, and that there is no evidence of misconduct on the part of the certifying programs, their representatives and proctors, or the applicants for certification.

If the certifying programs offer training or provide review materials to the applicants, these endeavors are to be considered completely separate from the administration of the certification test.

■ 18. Amend subpart F by adding appendix E to read as follows:

Appendix E to Subpart F of Part 82—Test Procedure for Leaks From Containers Holding Two Pounds or Less of Refrigerant for Use in an MVAC

This appendix is based on the California Air Resources Board (CARB) standard *TP–503: Test Procedure for Leaks from Small Cans of Automotive Refrigerant,* as amended on January 5, 2010; and CARB standard *BP–A1: Balance Protocol for Gravimetric Determination of Sample Weights using a Precision Balance,* as amended January 5, 2010.

Section 1. Applicability

This test procedure is used by manufacturers of containers holding two pounds or less of refrigerant for use in a motor vehicle air conditioner (MVAC) to determine the leakage rate of small containers of automotive refrigerant that are subject to the requirements of 40 CFR part 82, subpart F. Specifically, this test procedure will specify the equipment, procedures, and calculations to determine if a container holding two pounds or less of refrigerant for use in an MVAC complies with the leakage rate specified in § 82.154(c)(2)(ii). All terms in this appendix will follow the definitions in § 82.152 unless otherwise defined in this appendix.

All containers holding two pounds or less of refrigerant for use in an MVAC must comply with other applicable codes and regulations such as local, state, or Federal safety codes and regulations.

This test procedure involves the use of materials under pressure and operations and should only be used by or under the supervision of those familiar and experienced in the use of such materials and operations. Appropriate safety precautions should be observed at all times while performing this test procedure.

Section 2. Principle and Summary of Test Procedure

This procedure is used to determine the leakage rate of containers holding two pounds or less of refrigerant for use in an MVAC (small cans). Testing will involve subjecting both full and partially empty cans in both upright and inverted positions at two temperatures: 73 °F and 130 °F.

Thirty small cans are tested under each condition for a total of 240 small cans tested. Small cans are brought to temperature stability, weighed, then stored for 30 days under specified conditions of temperature, orientation, and state of fill, then re-weighed. Leakage rate (grams/year) is estimated by (weight loss in grams) × 365/(days duration). The leakage rate is then compared to a standard of 3.00 grams/year to determine if a given small can complies with the leakage rate specified in § 82.154(c)(2)(ii).

Section 3. Biases and Interferences

3.1 Contaminants on the operator's hands can affect the weight of the small can and the ability of the small can to absorb moisture. To avoid contamination of the small can, the balance operator should wear gloves while handling the small cans.

3.2 Weight determinations can be interfered with by moisture condensing on the small can and by thermal currents generated by temperature differences between the small can and the room temperature. The small cans cool during discharge and could cause condensation. For these reasons, small cans must be equilibrated to balance room temperature for at least four hours before weighing.

3.3 Variations in the temperature, pressure, and humidity of the ambient air will cause variations in the buoyancy of the small can. These variations should typically be less than 25 mg for a small can. If the small can is not leaking at all, then the uncorrected weight changes will be within the range of 0 ± 25 mg, which is about ten percent of the 247 mg loss expected after thirty days for a can leaking at 3 g/yr. In that case buoyancy corrections can be omitted. If the absolute value of the uncorrected weight change exceeds 25 mg, then all calculations must be made using weights corrected for buoyancy based on the temperature, pressure, and humidity of the weighing room.

3.4 Some electronic balances are sensitive to the effects of small static charges. The small can should be placed directly on the balance pan, ensuring metal to metal contact. If the balance pan is not grounded, the small can and balance pan should be statically discharged before weighing.

Section 4. Sensitivity and Range

The mass of a full small can could range from roughly 50 g to 1000 g depending on the container capacity. A top loading balance, capable of a maximum weight measurement of not less than 1,000 g and having a minimum readability of 0.001 g, reproducibility and linearity of ± 0.002 g, must be used to perform mass measurements.

Section 5. Equipment

5.1 A top loading balance that meets the requirements of Section 4 above.

5.2 A NIST traceable working standard mass for balance calibration. A NIST traceable working standard mass for a balance linearity check. A reference mass to serve as a ''blank'' small can.

5.3 An enclosure capable of controlling the internal air temperature from 73 °F ± 5 °F, and an enclosure capable of controlling the internal air temperature to 130 °F ± 5 °F.

5.4 A temperature instrument capable of measuring the internal temperature of the temperature conditioning enclosures and the balance room with a sensitivity of ± 2 °F.

5.5 A barometric pressure instrument capable of measuring atmospheric pressure at the location of the balance to within ± 0.02 inches of mercury.

5.6 A relative humidity measuring instrument capable of measuring the relative humidity (RH) at the location of the balance with a sensitivity of ± 2% RH.

5.7 A hose with appropriate fitting for dispensing refrigerant from the small can to a recovery machine.

5.8 A refrigerant recovery machine to collect the discharged refrigerant from small cans being tested.

Section 6. Calibration Procedures

6.1 Calibrations are applied to the balance and to the support equipment such as temperature, humidity, and pressure monitoring equipment. Procedures for calibration are not spelled out here. General calibration principals for the support equipment and the balance are described in Section 11, Quality Assurance/Quality Control. Detailed calibration procedures for measurements made using the balance are contained in Attachment A: ''Balance Protocol for Gravimetric Determination of Sample Weights using a Precision Balance.''

Section 7. Small Can Preparation

7.1 Receive a batch of 240 small cans of one design to be tested. These may include several SKUs from different manufacturers if the container and valve combination are the same.

7.2 Clean small cans with Alkanox solution or equivalent and dry with a lint free towel.

7.3 Confirm that the sample ID sticker on the small can matches the sample ID on the chain of custody forms.

7.4 Select a reference mass similar to the weight of a full small can. If multiple sets of similar sized small cans are being tested, only one reference mass is needed; it can be used with all sets. Store the reference mass in the balance area.

7.5 Evacuate the contents of one half of the small cans (120 cans) into the refrigerant recovery machine using normal DIY dispensing procedures until each small can is approximately half full.

7.6 Select a reference mass similar to the weight of the half-full small can. If multiple sets of similar size small cans are being tested, only one reference mass is needed; it can be used with all sets. Store the reference mass in the balance area.

Section 8. Small Can Weighing

Weighing cans on the balance is done in accordance with Attachment A to this appendix. Attachment A describes how to conduct weight determinations including appropriate calibration and QC data. This section, ''Small Can Weighing,'' describes the overall process, not the details of how to use the balance.

Initial Weights

8.1 Put on gloves. Check the small cans for contamination.

8.2 Place the 240 small cans into a location where they can equilibrate to balance room temperature. Record the small can test IDs and the equilibration start time on the Small Can Test Data Forms (Form XXXX–YY) available on EPA's Web site in sets of thirty, one form for each of the eight test conditions.

8.3 Let cans equilibrate for at least four hours.

8.4 Weigh the set of 240 small cans and the reference weights using Attachment A and log the results to the Balance Weighing Log Form (Form XXXX–YY) available on EPA's Web site.

8.5 Transfer data from the Balance Weighing Log Form to the Small Can Test Data Form in sets of 30, one set for each of the eight conditions to be tested.

Thirty-Day Soak

8.6. Place each set of 30 small cans into the appropriate orientation and temperature for soaking:

30 full small cans—73 °F, upright
30 full small cans—73 °F, inverted
30 full small cans—130 °F, upright
30 full small cans—130 °F, inverted
30 half-full small cans—73 °F, upright
30 half-full small cans—73 °F, inverted
30 half-full small cans—130 °F, upright
30 half-full small cans—130 °F, inverted

8.7. Soak the small cans for 30 days undisturbed.

Final Weighing

8.8 Place the 240 small cans into a location where they can equilibrate to balance room temperature.

8.9 Let the small cans equilibrate for at least four hours.

8.10 Weigh the set of 240 small cans, the reference weights, and any additional sets of small cans using Attachment A.

8.11 Transfer data from the Balance Weighing Log Form to the corresponding Small Can Test Data Forms.

Section 9. Calculations

Corrections for Buoyancy

The calculations in this section are described in terms of ''weight.'' Mass is a property of the small can, whereas weight is a force due to the effects of buoyancy and gravity. Procedures for correcting the effect of buoyancy are given in Attachment B of this appendix. Ignoring buoyancy, *i.e.* using weight data uncorrected for buoyancy effects, is acceptable for a thirty day test if the absolute magnitude of the weight change is less than 25 mg. If the uncorrected weight change exceeds 25 mg for any small can, then correct all small can weights for buoyancy using the procedures in Attachment B before performing the calculations described below.

Calculation of Leak Rate

The emission rate in grams/day for each small can is calculated by subtracting the final weight from the initial weight and then dividing the weight difference by the time difference measured in days to the nearest hour (nearest 1/24 of a day). The emission rate in g/day is multiplied by 365 to determine emission rate in grams/yr. If the annual emission rate for any small can exceeds the entire small can contents, then the annual emission rate for that small can is adjusted to equal the entire small can contents/year (*e.g.,* about 350 g/yr for a 12 ounce small can). The annual emission rate for the purpose of the test is calculated by averaging the 240 individual adjusted annual emission rates and rounding to two decimal places. The cans fail the test if the adjusted annual emission rate averaged over 240 cans is greater than 3.00 g/yr. The calculations are described below.

Loss Rate for Each Small Can

$Ei_{daily} = (Wi_{final} - Wi_{initial}) / (Di_{final} - Di_{initial})$ g/day

$Ei_{annual} = 365 \times Ei_{daily}$ g/year

$Ei_{adjusted}$ = Minimum of ($Ei_{adjusted}$, Ci/year) g/yr

Where,

Ei = emission rate

Wi_{final} = weight of can i after soaking (grams)

$Wi_{initial}$ = weight of can I before soaking (grams)

Di_{final} = date/time of final weight measurements (days)

$Di_{initial}$ = date/time of initial weight measurements (days)

Ci = original factory mass of refrigerant in can i

Note: Date/Times are measured in days. Microsoft Excel stores dates and times in days, and the calculations can be made directly in Excel. If calculations are made manually, calculate serial days to the nearest hour for each date and time as follows:

D = Julday + Hour/24

Where,

Julday = serial day of the year: Jan 1 = 1, Jan 31 = 31, Feb 1 = 32, etc.

Hour = hour of day using 24-hour clock, 0 to 23

Calculate the average loss rate for the 240 small cans as follows:

$E_{mean} = [\text{Sum } (E_{adjusted}i), i{=}1 \text{ to } 240] / 240$

Section 10. Recordkeeping

During small can weighing, record the small can weights and date/times on the Balance Weighing Log Form. After each weighing session, transfer the measured weights and date/times from the Balance Weighing Log Form to the Small Can Test Data Form.

At the end of the test, complete the calculations described in Section 9, Calculations, and record the results on the Small Can Test Data Form.

Section 11. Quality Assurance/Quality Control

11.1 All temperature, pressure, and humidity instruments should be calibrated annually against NIST traceable laboratory standards. The main purpose of the NIST traceable calibration is to establish the absolute accuracy of the device. The instruments should also be checked periodically such as weekly, monthly, or quarterly against intermediate standards or against independent instruments. For example, a thermocouple can be checked weekly against a wall thermometer. A barometer or pressure gauge can be checked weekly by adjusting to sea level and comparing with local airport data. The main purpose of the frequent checks is to verify that the device has not failed in some way.

This is especially important for electronic devices such as a digital thermometer, but even a liquid filled thermometer can develop a problem such as a bubble.

11.2 The balance should be serviced and calibrated annually by an independent balance service company or agency using NIST traceable reference masses. Servicing verifies accuracy and linearity, and the maintenance performed helps ensure that a malfunction does not develop.

11.3 The balance must also be calibrated and its linearity checked with working standards before and after each weighing session, or before and after each group of 24 small cans if more than 24 small cans are weighed in a session. Procedures for calibrating and using the balance, as well as recording balance data, are described in the accompanying balance weighing protocol. These procedures include zero checks, calibration checks, and reference mass checks. Procedures for calculating quality control data from those checks are described in Attachment A.

11.4 The small cans are cleaned then handled using gloves to prevent contamination. All equilibration and soaking must be done in a dust free area.

ATTACHMENT A—BALANCE PROTOCOL FOR GRAVIMETRIC DETERMINATION OF SAMPLE WEIGHTS USING A PRECISION BALANCE

1. Scope and Application

This Protocol summarizes a set of procedures and tolerances for weighing objects in the range of 0 to 1,000 g with a resolution of 0.001 g. This protocol only addresses balance operations, it does not address project requirements for equilibration, sample hold time limits, sample collection etc.

2. Summary of Method

The balance is zeroed and calibrated using procedures defined herein. Object weight determinations are conducted along with control object weight determinations, zero checks, calibration checks, sensitivity checks, and replicate weightings in a defined sequence designed to control and quantitatively characterize precision and accuracy.

3. Definitions

N/A.

4. Interferences

Object weights can be affected by temperature and relative humidity of their environment, air currents, static electricity, gain and loss of water vapor, gain or loss of and loss of volatile compounds directly from the sample or from contaminants such as finger prints, marker ink, and adhesive tape.

Contamination, transfer of material to or from the samples, is controlled by conducting operations inside a clean area dedicated to the purpose and having a filtered laminar air flow where possible; by wearing gloves while handling all samples and related balance equipment; by using forceps to handle small objects, and by keeping the balance and all related equipment inside the clean area.

Air currents are controlled by conducting weighing operations inside a closed chamber or glove box and by allowing the substrates to reach temperature and relative humidity equilibrium. The chamber is maintained at 40% relative humidity and 25 °C by a continuous humidity and temperature control system. The temperature and RH conditions are recorded at least once per weighing sessions. Equilibration times for samples that are particularly sensitive to humidity or to loss of semi-volatiles species are specified by project requirements.

Static electric charges on the walls of the balance and the weighed objects, including samples, controls, and calibration weights, can significantly affect balance readings. Static is avoided by the operator ground himself and test objects as described in the balance manual.

5. Personnel Health and Safety

N/A.

6. Equipment and Supplies

- Filtered, temperature and humidity controlled weighing chamber.
- Precision Balance.
- Plastic forceps.
- Nylon fabric gloves.
- Working calibration weights: ANSI Class 2, 1000g and 500 g.
- Working sensitivity weight: 50 mg.
- Reference objects: references are one or more objects that are typical of the objects to be weighed during a project, but that are stored permanently inside the balance glove box. Reference objects are labeled Test1, Test2, Test3, etc.

7. Reagents and Standards

N/A.

8. Sample Collection, Preservation, and Storage

N/A. See relevant project requirements and SOPs.

9. Quality Control

Data quality is controlled by specifying frequencies and tolerances for Zero, Calibration, Linearity, and Sensitivity checks. If checks do not meet tolerance criteria, then samples must be re-weighed. In addition, the procedures specify frequencies for Control Object Checks.

Data quality is quantitatively characterized using Zero Check, Calibration Check, and Control Check data. These data are summarized monthly in statistics and QC charts.

10. Calibration and Standardization

The absolute accuracy of the balance is established by calibration against an ANSI Class 2, stainless steel working weight: 1000.000 g ± 0.0025 g. Linearity is established checking the midpoint against an ANSI Class 2 stainless steel working weight: 500.000 ± 0.0012 g. Sensitivity is established using and ANSI Class 2 stainless steel or aluminum working weight: 50 mg. Precision is checked by periodically checking zero, calibration, and reference object weights.

11. Procedure

11.1 Overview of Weighing Sequence

Weighing a series of substrates consists of performing the following procedures in sequence, while observing the procedures for handling and the procedures for reading the balance:

1. Initial Adjustment.
2. Weigh eight samples.
3. Zero Check.
4. Weigh eight samples.
5. Zero Check.
6. Weigh eight samples.
7. Calibration Check.
8. Return to step 2.
9. If less than 24 cans are weighed, perform a final Calibration Check at the end of weighing.

This sequence is interrupted and samples are reweighed if QC check tolerances are not met. Each of these procedures along with procedures for handling and reading the balance are described below. The QC tolerances referred to in these procedures are listed in Table 1.

11.2 Handling

1. Never touch samples, weights, balance pans, etc. with bare hands. Wear powder free gloves to handle the weights, controls, and samples.

11.3 Reading the Balance

1. Close the door. Wait for the balance stabilization light to come on, and note the reading.
2. Watch the balance reading for 30 sec (use a clock). If the reading has not changed by more than 0.001 g from the reading noted in step 1, then record the reading observed at the end of the 30 sec period.
3. If the reading has drifted more than 0.001 g note the new balance reading and go to step 2.
4. If the balance reading is flickering back and forth between two consecutive values choose the value that is displayed more often than the other.
5. If the balance reading is flickering equally back and forth between two consecutive values choose the higher value.

11.4 Initial Adjustment

1. Empty the sample pan Close the door. Select Range 1000 g.
2. Wait for a stable reading.
3. Record the reading with QC code IZC (initial zero check).
4. Press the Tare button.
5. Record the reading in the logbook with QC code IZA (initial zero adjust).
6. Place the 1,000 g working calibration weight on the balance pan.
7. Wait for a stable reading.
8. Record the reading with QC code ICC (initial cal check).
9. Press the Calibrate button.
10. Record the reading with QC code ICA (initial cal adjust).
11. Remove the calibration weight.
12. Wait for a stable reading.
13. Record the reading with QC code IZC.
14. If the zero reading exceeds ± 0.002 g, go to step 4.
15. Place the 500 g calibration weight on the balance pan.
16. After a stable reading, record the reading with QC code C500. Do not adjust the balance.

17. Add the 0.050 g weight to 500 g weight on the balance pan.

18. After a stable reading, record the reading with QC code C0.05. Do not adjust the balance.

19. Weigh reference object TEST1, record reading with QC code T1.

20. Weigh the reference object TEST2, TEST3, etc. that is similar in weight to the samples that you will be weighing. Record with QC code T2, T3, etc.

11.5 Zero Check

1. Empty the sample pan. Close the door.
2. Wait for a stable reading
3. Record the reading with QC code ZC
4. If the ZC reading is less than or equal to the zero adjustment tolerance shown in Table 1, return to weighing and *do not adjust the zero*. If the ZC reading exceeded the zero adjustment tolerance, proceed with steps 5 through 7.
5. Press the Tare button
6. Record the reading in the logbook with QC code ZA.
7. If the ZC reading exceeded the zero re-weigh tolerance, change the QC code recorded in step 3 from ZC to FZC. Then enter a QC code of FZ into the QC code column of all samples weights obtained after the last valid zero check. Re-weigh all of those samples, recording new data in new rows of the logbook.

11.6 Calibration Check

1. First, follow procedures for Zero Check. If the ZC was within tolerance, tare the balance anyway (*i.e.* follow steps 5 and 6 of the Zero Check method)
2. Place the 1,000 g working calibration weight on the sample pan, wait for a stable reading.
3. Record the reading with QC code C1000
4. If the C1000 reading is less than or equal to the calibration adjustment tolerances, skip steps 5 through 8 and proceed to step 9. *Do not adjust the calibration.*
5. If the C100 reading exceeded the calibration adjust tolerance, press the Calibrate button.
6. Record the reading in the logbook with QC code CA
7. Perform a Zero Check (follow the Zero Check method)
8. If the C1000 reading exceeded the calibration re-weigh tolerance, change the code recorded in step 3 from C1000 to FC1000. Enter FC into the QC column for all sample weights obtained after the last valid calibration check. Re-weigh all of those samples, recording new data in new rows of the logbook.

11.7 Replicate Weighing Check

1. This protocol does not include reweigh samples to obtain replicates. The projects for which this protocol is intended already include procedures multiple weightings of each sample.

TABLE 1—QC TOLERANCES AND FREQUENCIES FOR BALANCE PROTOCOL

Reading Tolerance:	
0.001 g, stable for 30 sec.	
Adjustment Tolerances:	
Zero:	−0.003 to +0.003 g.
Calibration:	999.997 to 1000.003 g.
Controls:	none.
Replicates:	none.
Re-weigh Tolerances:	
Zero:	−0.005 to +0.005 g.
Calibration:	999.995 to 1000.005 g.
Controls:	none.
Replicates:	none.
Reference Objects:	
Test 1—A reference object weighing about 400 g.	
Test 2—A reference object weighing about 200 g.	
Test 3—A reference object weighing about 700 g.	
QC Frequencies:	
Zero Checks:	once per 8 samples.
Calibration Checks:	once per 24 samples.
Repeat weighings:	none (test method includes replicate determinations).
Control objects:	once per weighing session.

12. Data Analysis and Calculations

For Zero Checks, let Z equal the recorded Zero Check value. For control checks let T1, T2, etc. equal the recorded value for control object Test 1, Test 2, etc. For Calibration Checks, let C1000 equal C1000 reading minus 1000, M = C500 − 500, S = .C.050 − C500 − .050. For Replicate Checks, let D equal the loss that occurred between the first and second measurements. In summary:

T1 = T1
T2 = T2
T3 = T3
Z = ZC − 0
C = C1000 − 1000
M = C500 − 500
G = C050 − C500 − .050

Tabulate the mean and standard deviation for each of the following: Z, C, M, G. T1, T2, T3. Depending on the number of operators using the balance and the number of protocols in use, analyze the data by subcategories to determine the effects of balance operator and protocol. Each of these standard deviations, S_Z, S_C, etc. is an estimate of the precision of single weight measurement.

For Z, C, M, and G, check the mean value for statistical difference from 0. If the means are statistically different than zero, troubleshooting to eliminate bias may be called for. For Z, C, M, G, T1, T2, T3, check that the standard deviations are all comparable. If there are systematic differences, then troubleshooting to eliminate the problem may be called for.

Note that the precision of a weight *gain,* involves two weight determinations, and therefore is larger than S by a factor of sqrt(2). On the other hand replicate weighings improves the precision of the determinations by a factor of sqrt(N). If N = 2, *i.e.* duplicates, then the factors cancel each other.

To estimate the overall uncertainty in a weight determination, a conservative estimate might be to combine the imprecision contributed by the zero with the imprecision contributed by the calibration.

$U = Sqrt(S_Z^2 + S_C^2)$

The uncertainty in a weight *gain* from N replicates is then given by:

U_{gain} = Sqrt(2) × Sqrt($S_Z^2 + S_C^2$) /Sqrt(N)

But due to the balance adjustment and reweigh tolerances, we expect S_Z to approximately equal S_C, to approximately equal S_M, etc. tolerances, so that the equation above becomes:

U_{gain} = 2 × S/Sqrt(N)

Where S is any individual standard deviation; or better, a pooled standard deviation.

13. Method Performance

The data necessary to characterize the accuracy and precision of this method are still being collected. The method is used primarily to weigh objects before and after a period of soaking to determine weight loss by subtraction. Given the reweigh tolerances, we expect that the precision of weight gain determinations will be on the order of 0.006 g at the 1-sigma level. Bias in the weight gain determination, due to inaccuracy of the calibration weight and to fixed non-linearity of the balance response is on the order 0.005% of the gain.

14. Pollution Prevention

When discharging half the can contents during can preparation, do not vent the contents of the small can to the atmosphere. Use an automotive recovery machine to transfer small can contest to a recovery cylinder.

15. Waste Management

Dispose of the contents of the recycle cylinder through a service that consolidates waste for shipment to EPA certified facilities for reclaiming or destruction.

ATTACHMENT 2—COMPENSATION OF WEIGHT DATA FOR BUOYANCY AND GRAVITY EFFECTS

Gravity

Variations in gravity are important only when weighing objects under different gravitational fields, *i.e.* at different locations or at different heights. Since the balance procedures calibrate the balance against a known mass (the calibration ''weight'') at the same location where sample objects are weighed, there is no need to correct for location. Although both the sample and the calibration weight are used at the same location, there will be a difference in the height of the center of gravity of the sample object (small can) and the center of gravity of the reference mass (calibration weight). However, this difference in height is maintained during both the initial weights and final weights, affecting the initial and final weights by the same amount, and affecting the scale of the weight difference by only a few ppm. In any event, the magnitude of this correction is on the order of 0.3 ug per kg per mm of height difference. A difference on the order of 100 mm would thus yield a weight difference of about 0.03 mg, which is insignificant compared to our balance resolution which is 0.001 g or 1 mg.

Based on the discussion above, no corrections for gravity are necessary when determining weight changes in small cans.

Buoyancy

Within a weighing session, the difference in density between the sample object and the calibration weight will cause the sample object weight value to differ from its mass value due to buoyancy. For a 1-liter object in air at 20 °C and at 1 atm, the buoyant force is about 1.2 g. The volume of a 1 kg object with a density of 8 g/cm³ (*e.g.* a calibration weight), is about 0.125 liters, and the buoyancy force is about 0.15 g. Variations in air density will affect both of these values in proportion. The net value being affected by variations in air density is thus on the order of 1.2–0.15 = 1.05 g. Air density can vary up or down by 2% or more due to variations in barometric pressure, temperature, and humidity. The buoyancy force will then vary up or down by 0.02 g, or 20 mg. This is significant compared to the weight change expected after one week for a can leaking at 3 grams per year, which is 57 mg.

Based on the discussion above, buoyancy corrections must be made.

Variables measured or calculated:

V_{can} = volume of can (cm³). Estimate to within 10% by measuring the can dimensions or by water displacement. Error in the can volume will cause an error in the absolute amount of the buoyancy force, but will have only a small effect on the change in buoyancy force from day to day.

W_{can} = nominal weight of a can (g), used to calculate the nominal density of the can.

ρ_{can} = nominal density of a small can (g/cm³). The nominal values can be applied to corrections for all cans. It is not necessary to calculate a more exact density for each can. Calculate once for a full can and once for a half full can as follows:

$\rho_{can} = W_{CAN}/V_{CAN}$

T = Temperature in balance chamber (degrees Celsius).

RH = Relative humidity in balance chamber (expressed a number between 0 and 100).

P_{baro} = Barometric pressure in balance chamber (millibar). Use actual pressure, NOT pressure adjusted to sea level.

ρ_{air} = density of air in the balance chamber (g/cm³). Calculate using the following approximation:

$\rho_{air} = 0.001*[0.348444*P_{baro} - (RH / 100)\times(0.252xT - 2.0582)] / (T + 273.15)$

ρ_{ref} = the reference density of the calibration weight (g/cm³). Should be 8.0 g/cm³.

Equation to correct for buoyancy: $W_{corrected} = W_{reading} \times (1 - \rho_{air} / \rho_{ref}) / (1 - \rho_{air} / \rho_{can})$

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FEDERAL REGISTER

Vol. 80 Monday,

No. 216 November 9, 2015

Part IV

The President

Notice of November 5, 2015—Notice of Intention To Enter Into the Trans-Pacific Partnership Agreement

Federal Register

Vol. 80, No. 216

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Presidential Documents

Title 3—

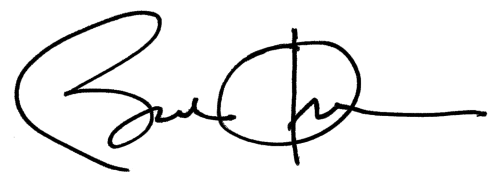
The President

Notice of November 5, 2015

Notice of Intention To Enter Into the Trans-Pacific Partnership Agreement

Consistent with section 106(a)(1)(A) of the Bipartisan Congressional Trade Priorities and Accountability Act of 2015 (Public Law 114–26, Title I; the ''Trade Priorities Act''), I have notified the Congress of my intention to enter into a free trade agreement, known as the Trans-Pacific Partnership (TPP) Agreement, which will generate export opportunities for U.S. manufacturers, service suppliers, farmers, ranchers, and businesses; help create jobs in the United States; and help American consumers save money while offering them more choices. I am negotiating to enter into the TPP Agreement with the following countries: Australia, Brunei Darussalam, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, and Vietnam; provided that those countries meet the market-access goals that we set out to achieve and agree to high-standard obligations, consistent with the Trade Priorities Act.

Consistent with section 106(a)(1)(A) of the Trade Priorities Act, this notice shall be published in the *Federal Register.*



THE WHITE HOUSE,
November 5, 2015.

[FR Doc. 2015–28709
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FEDERAL REGISTER PAGES AND DATE, NOVEMBER

CFR PARTS AFFECTED DURING NOVEMBER

At the end of each month the Office of the Federal Register publishes separately a List of CFR Sections Affected (LSA), which lists parts and sections affected by documents published since the revision date of each title.

LIST OF PUBLIC LAWS

Note: No public bills which have become law were received by the Office of the Federal Register for inclusion in today's **List of Public Laws**.

Last List November 4, 2015

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