DEPARTMENT OF ENERGY

10 CFR Parts 429 and 431

[Docket Number EERE–2014–BT–STD–0027]

RIN 1904–AD31

Energy Conservation Program: Energy Conservation Standards for Commercial Prerinse Spray Valves

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Notice of proposed rulemaking (NOPR) and announcement of public meeting.

SUMMARY: The Energy Policy and Conservation Act of 1975 (EPCA), as amended, prescribes energy conservation standards for various consumer products and certain commercial and industrial equipment, including commercial prerinse spray valves (CPSVs). EPCA also requires the U.S. Department of Energy (DOE) to determine whether more-stringent, amended standards would be technologically feasible and economically justified, and would save a significant amount of energy. In this notice, DOE proposes amended energy conservation standards for commercial prerinse spray valves. The notice also announces a public meeting to receive comment on these proposed standards and associated analyses and results.

DATES:

Meeting: DOE will hold a public meeting on Tuesday, July 28, 2015. The standards meeting will start immediately following the test procedure meeting. The meeting will also be broadcast as a webinar. See section VII ''Public Participation'' for webinar registration information, participant instructions, and information about the capabilities available to webinar participants.

Comments: DOE will accept comments, data, and information regarding this NOPR before and after the public meeting, but no later than September 8, 2015. See section VII ''Public Participation'' for details.

ADDRESSES: The public meeting will be held at the U.S. Department of Energy, Forrestal Building, Room 8E–089, 1000 Independence Avenue SW., Washington, DC 20585.

Instructions: Any comments submitted must identify the NOPR for Energy Conservation Standards for commercial prerinse spray valves, and provide docket number EERE–2014–BT–STD–0027 and/or regulatory information number (RIN) number 1904–AD31. 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: SprayValves2014STD0027@ee.doe.gov*. Include the docket number and/or RIN in the subject line of the message. Submit electronic comments in WordPerfect, Microsoft Word, PDF, or ASCII file format, and avoid the use of special characters or any form of encryption.
3. *Postal Mail:* Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Office, Mailstop EE–5B, 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.

Written comments regarding the burden-hour estimates or other aspects of the collection-of-information requirements contained in this proposed rule may be submitted to Office of Energy Efficiency and Renewable Energy through the methods listed previously and by email to *Chad_S_Whiteman@omb.eop.gov*.

No faxes will be accepted. For detailed instructions on submitting comments and additional information on the rulemaking process, see section VII 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 *www.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=100*. 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 VII, ''Public Participation'' for further information on how to submit comments through *www.regulations.gov*.

FOR FURTHER INFORMATION CONTACT:

Mr. James Raba, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, EE–5B, 1000 Independence Avenue SW., Washington, DC 20585–0121. Telephone: (202) 586–8654. Email: *jim.raba@ee.doe.gov.*

Mr. Peter Cochran, U.S. Department of Energy, Office of the General Counsel, GC–33, 1000 Independence Avenue SW., Washington, DC 20585–0121. Telephone: (202) 586–7935. Email: *Peter.Cochran@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:

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I. Synopsis of the Proposed Rule

Title III, Part B [1] of the Energy Policy and Conservation Act of 1975 (EPCA), Public Law 94–163 (42 U.S.C. 6291–6309, as codified), established the Energy Conservation Program for Consumer Products Other Than Automobiles.[2] These products include commercial prerinse spray valves (CPSV), the subject of this document.[3]

Pursuant to EPCA, any new or amended energy conservation standard must be designed to achieve the maximum improvement in energy efficiency that is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A)) Furthermore, the new or amended standard must result in a significant conservation of energy. (42 U.S.C. 6295(o)(3)(B)) EPCA also provides that not later than 6 years after issuance of any final rule establishing or amending a standard, DOE must publish either a notice of determination that standards for the product do not need to be amended, or a notice of proposed rulemaking (NOPR) including new proposed energy conservation standards. (42 U.S.C. 6295(m)(1))

In accordance with these and other statutory provisions discussed in this notice, DOE proposes amended energy conservation standards for commercial prerinse spray valves. The proposed standards, which are described in terms of the maximum water flow rate (in gallons per minute, gpm) for each product class (defined by spray force in ounce-force, ozf), are shown in Table I.1. The proposed standards, if adopted, would apply to all products listed in Table I.1 and manufactured in, or imported into, the United States on or after the date 3 years after the publication of the final rule for this rulemaking. For purposes of the analyses conducted in support of this NOPR, DOE used 2015 as the expected year of publication of any final standards and 2018 as the expected compliance year.[4]

TABLE I.1—PROPOSED ENERGY CONSERVATION STANDARDS FOR COMMERCIAL PRERINSE SPRAY VALVES (COMPLIANCE STARTING 2018)

Product class	Maximum water flow rate (gpm)
1. Light duty (≤5 ozf)	0.65
2. Standard duty (>5 ozf and ≤8 ozf)	0.97
3. Heavy duty (>8 ozf)	1.24

A. Benefits and Costs to Consumers

Table I.2 presents DOE's evaluation of the economic impacts of the proposed amended standards on consumers of commercial prerinse spray valves, as measured by the average life-cycle cost (LCC) savings and the simple payback period (PBP).[5] The average LCC savings are positive for all product classes. The PBP for all product classes is also less than the projected average CPSV lifetime of approximately 5 years.

[1] For editorial reasons, upon codification in the U.S. Code, part B was redesignated part A.

[2] All references to EPCA in this document refer to the statute as amended through the Energy Efficiency Improvement Act of 2015, Public Law 114–11 (Apr. 30, 2015).

[3] Because Congress included commercial prerinse spray valves in part A of Title III of EPCA, the consumer product provisions of part A (not the industrial equipment provisions of part A–1) apply to commercial prerinse spray valves. However, because commercial prerinse spray valves are commonly considered to be commercial equipment, as a matter of administrative convenience and to minimize confusion among interested parties, DOE placed the requirements for commercial prerinse spray valves into subpart O of 10 CFR part 431. Part 431 contains DOE regulations for commercial and industrial equipment.

[4] Because the anticipated compliance date is late in the year 2018, for analytical purposes, DOE conducted its analyses utilizing shipments associated with the 2019–2048 period. The analytical effect is equivalent to the use of a 2019 compliance year. In the MIA, 2019 is referred to as the ''analysis compliance year.''

[5] The average LCC savings are measured relative to the no-new-standards case efficiency distribution, which depicts the CPSV market in the compliance year (see section IV.F.9). The simple PBP, which is designed to compare specific efficiency levels, is measured relative to the baseline CPSV model (see section IV.C.1).

TABLE I.2—IMPACTS OF PROPOSED ENERGY CONSERVATION STANDARDS ON CONSUMERS OF COMMERCIAL PRERINSE SPRAY VALVES

Product class	Average LCC savings (2014$)	Simple payback period (years)
1. Light duty (≤5 ozf)	211	0.0
2. Standard duty (>5 ozf and ≤8 ozf)	472	0.0
3. Heavy duty (>8 ozf)	667	0.0

DOE's analysis of the impacts of the proposed standards on consumers is described in section IV.F of this notice.

B. Impact on Manufacturers

The industry net present value (INPV) is the sum of the discounted cash flows to the industry from the base year through the end of the analysis period (2015 to 2048). Using a real discount rate of 6.9 percent,[6] DOE estimates that the INPV for manufacturers of commercial prerinse spray valves is $9.1 million in 2014$. Under the proposed standards, DOE expects that manufacturers may lose up to 21.6 percent of their INPV, which is approximately $2.0 million. Additionally, based on its analysis of available information, DOE does not expect any plant closings or significant loss of employment.

C. National Benefits and Costs[7]

DOE's analyses indicate that the proposed standards would save a significant amount of energy and water. The lifetime savings for commercial prerinse spray valves purchased in the 30-year period (2019 to 2048) amount to 0.10 quadrillion Btu (quads)[8] and 120.18 billion gallons of water. This represents a savings of 9 percent relative to the energy use of this product in the no-new-standards case.[9] This also represents a savings of 9 percent relative to the water use of this product in the no-new-standards case.

The cumulative net present value (NPV) of total consumer costs and savings of the proposed standards for commercial prerinse spray valves ranges from $0.71 billion (at a 7-percent discount rate) to $1.46 billion (at a 3-percent discount rate). This NPV expresses the estimated total value of future operating-cost savings minus the estimated increased product costs for commercial prerinse spray valves purchased in 2019–2048.

In addition, the proposed standards would have significant environmental benefits.[10] The described energy savings would result in cumulative emission reductions (over the same period as for energy savings) of 5.76 million metric tons (Mt)[11] of carbon dioxide (CO_2), 46.94 thousand tons of methane (CH_4), 2.43 thousand tons of sulfur dioxide (SO_2), 13.22 thousand tons of nitrogen oxides (NO_X), 0.04 thousand tons of nitrous oxide (N_2O), and 0.01 tons of mercury (Hg).[12] The cumulative reduction in CO_2 emissions through 2030 amounts to 1.83 Mt, which is equivalent to the emissions resulting from the annual electricity use of about 251,719 homes.

The value of the CO_2 reduction is calculated using a range of values per metric ton of CO_2 (otherwise known as the Social Cost of Carbon, or SCC) developed by a recent Federal interagency process.[13] The derivation of the SCC values is discussed in section IV.L of this notice. Using discount rates appropriate for each set of SCC values, DOE estimates the present monetary value of the CO_2 emissions reduction is between $0.04 billion and $0.61 billion. DOE also estimates the present monetary value of the NO_X emissions reduction is between $1.80 and $18.48 million at a 7-percent discount rate and between $3.52 and $36.15 million at a 3-percent discount rate.[14]

Table I.3 summarizes the national economic costs and benefits expected to result from the proposed standards for commercial prerinse spray valves.

TABLE I.3—SUMMARY OF NATIONAL ECONOMIC BENEFITS AND COSTS OF PROPOSED ENERGY CONSERVATION STANDARDS FOR COMMERCIAL PRERINSE SPRAY VALVES *

Category	Present value (million 2014$)	Discount rate (%)
Benefits		
Operating Cost Savings	708	7
	1,459	3
CO_2 Reduction Monetized Value ($12.2/metric ton case) **	44	5
CO_2 Reduction Monetized Value ($41.1/metric ton case) **	196	3
CO_2 Reduction Monetized Value ($63.3/metric ton case) **	309	2.5
CO_2 Reduction Monetized Value ($121/metric ton case) **	606	3

[6] The discount rate is an industry average discount rate, which was estimated using publically available industry financial data for companies that sell CPSVs in the U.S. Data sources are listed in section IV.J.1.

[7] All monetary values in this section are expressed in 2014 dollars and are discounted to 2015, unless otherwise noted.

[8] A quad is equal to 10^{15} British thermal units (Btu).

[9] The no-new-standards case assumptions are described in section IV.F.9. The no-new-standards case represents a projection of energy consumption in the absence of amended mandatory efficiency standards, and it considers market forces and policies that may affect future demand for more efficient products.

[10] The emission reductions calculated here result from the energy savings only. The emission reductions from water savings are not calculated as part of this analysis.

[11] A metric ton is equivalent to 1.1 short tons. Results for emissions other than CO_2 are presented in short tons.

[12] DOE calculated emissions reductions relative to the *Annual Energy Outlook 2014* (*AEO2014*) reference case, which generally represents current legislation and environmental regulations for which implementing regulations were available as of October 31, 2013.

[13] *Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866,* Interagency Working Group on Social Cost of Carbon, United States Government (May 2013; revised November 2013) (Available at: *http://www.whitehouse.gov/sites/default/files/omb/assets/inforeg/technical-update-social-cost-of-carbon-for-regulator-impact-analysis.pdf*).

[14] DOE is currently investigating valuation of avoided Hg and SO_2 emissions.

TABLE I.3—SUMMARY OF NATIONAL ECONOMIC BENEFITS AND COSTS OF PROPOSED ENERGY CONSERVATION STANDARDS FOR COMMERCIAL PRERINSE SPRAY VALVES *—Continued

Category	Present value (million 2014$)	Discount rate (%)
NO_X Reduction Monetized Value (at $2,723/ton)	10 20	7 3
Total Benefits †	914 1,675	7 3
Costs		
Manufacturer Conversion Costs ‡	2 to 3	N/A
Total Net Benefits		
Including Emissions Reduction Monetized Value †	914 1,675	7 3

* This table presents the costs and benefits associated with commercial prerinse spray valves shipped in 2019−2048. These results include benefits to consumers which accrue after 2048 from the products purchased in 2019−2048. The results account for the incremental variable and fixed costs incurred by manufacturers due to the proposed standard, some of which may be incurred in preparation for the rule.

** The CO_2 values represent global monetized values of the SCC, in 2014$ per metric ton, in 2015 under several scenarios of the updated SCC values. The first three cases use the averages of SCC distributions calculated using 5 percent, 3 percent, and 2.5 percent discount rates, respectively. The fourth case represents the 95th percentile of the SCC distribution calculated using a 3 percent discount rate.

† Total benefits for both the 3 percent and 7 percent cases are derived using the series corresponding to average SCC with 3 percent discount rate. Manufacturer Conversion Costs are not included in the Total Net Benefits calculations.

‡ The lower value of the range represents costs associated with the Sourced Components conversion cost scenario. The upper value represents costs associated with the Fabricated Components conversion cost scenario. Manufacturer conversion cost estimates are based on the engineering analysis and product teardowns conducted in 2014, and, therefore, have not been discounted. In the GRIM, these values are spread over the 3-year conversion period leading up to the compliance year.

The benefits and costs of these proposed standards, for commercial prerinse spray valves sold in 2019–2048, can also be expressed in terms of annualized values. The annualized monetary values are the sum of: (1) The annualized national economic value of the benefits from consumer operation of products that meet the proposed standards (consisting primarily of operating cost savings from using less energy and water, minus increases in product purchase and installation costs, which is another way of representing consumer NPV); and (2) the annualized monetary value of the benefits of emission reductions, including CO_2 emission reductions.[15]

Although combining the values of operating savings and CO_2 emission reductions provides a useful perspective, two issues should be considered. First, the national operating savings are domestic U.S. consumer monetary savings that occur as a result of market transactions, whereas the value of CO_2 reductions is based on a global value. Second, the assessments of operating cost savings and CO_2 savings are performed with different methods that use different time frames for analysis. The national operating cost savings is measured for the lifetime of commercial prerinse spray valves shipped in 2019–2048. Because CO_2 emissions have a very long residence time in the atmosphere,[16] the SCC values in future years reflect future CO_2-emissions impacts that continue beyond 2100.

Estimates of annualized benefits and costs of the proposed standards are shown in Table I.4. The results under the primary estimate are as follows. Using a 7-percent discount rate for benefits and costs other than CO_2 reduction (for which DOE used a 3-percent discount rate, along with the average SCC series that has a value of $41.1 per metric ton in 2015), there are no increased product costs associated with the standards proposed in this rule, while the benefits are $69.90 million per year in reduced product operating costs, $10.94 million per year in CO_2 reductions, and $1.00 million per year in reduced NO_X emissions. In this case, the net benefit amounts to $81.85 million per year. Using a 3-percent discount rate for all benefits and costs as well as the average SCC series that has a value of $41.1 per metric ton in 2015, there are no increased product costs associated with the standards proposed in this rule, while the benefits are $81.32 million per year in reduced operating costs, $10.94 million in CO_2 reductions, and $1.11 million in reduced NO_X emissions. In this case, the net benefit amounts to $93.37 million per year.

[15] To convert the time-series of costs and benefits into annualized values, DOE calculated a present value in 2015, the year used for discounting the NPV of total customer costs and savings. For the benefits, DOE calculated a present value associated with each year's shipments in the year in which the shipments occur (*e.g.,* 2020 or 2030), and then discounted the present value from each year to 2015. The calculation uses discount rates of 3 and 7 percent for all costs and benefits except for the value of CO_2 reductions, for which DOE used case-specific discount rates, as shown in Table I.3. Using the present value, DOE then calculated the fixed annual payment over a 30-year period, starting in the first year of the analysis period, which yields the same present value.

[16] The atmospheric lifetime of CO_2 is estimated of the order of 30–95 years. Jacobson, MZ, ''Correction to 'Control of fossil-fuel particulate black carbon and organic matter, possibly the most effective method of slowing global warming,' '' *J. Geophys. Res.* 110. pp. D14105 (2005).

TABLE I.4—ANNUALIZED BENEFITS AND COSTS OF PROPOSED ENERGY CONSERVATION STANDARDS FOR COMMERCIAL PRERINSE SPRAY VALVES

	Discount rate (%)	Million 2014$/year		
		Primary estimate *	Low net benefits estimate *	High net benefits estimate *
Benefits				
Consumer Operating Cost Savings	7	69.90	65.90	72.70
	3	81.32	75.92	85.10
CO_2 Reduction at $12.0/t **	5	3.33	3.33	3.33
CO_2 Reduction at $40.5/t **	3	10.94	10.94	10.94
CO_2 Reduction at $62.4/t **	2.5	15.91	15.91	15.91
CO_2 Reduction at $119/t **	3	33.81	33.81	33.81
NO_X Reduction at $2,723/ton	7	1.00	1.00	1.00
	3	1.11	1.11	1.11
Total†	7 plus CO_2 range	74 to 105	70 to 101	77 to 108
	7	81.85	77.84	84.64
	3 plus CO_2 range	86 to 116	80 to 111	90 to 120
	3	93.37	87.96	97.15
Costs				
Manufacturer Conversion Costs †	7	0.16 to 0.24	0.16 to 0.24	0.16 to 0.24
	3	0.10 to 0.15	0.10 to 0.15	0.10 to 0.15
Total Net Benefits				
Total ‡	7 plus CO_2 range	74 to 105	70 to 101	77 to 108
	7	81.85	77.84	84.64
	3 plus CO_2 range	86 to 116	80 to 111	90 to 120
	3	93.37	87.96	97.15

* This table presents the annualized costs and benefits associated with commercial prerinse spray valves shipped in 2019–2048. These results include benefits to consumers which accrue after 2048 from the products purchased in 2019–2048. The results account for the incremental variable and fixed costs incurred by manufacturers due to the proposed standard, some of which may be incurred in preparation for the rule. The primary, low benefits, and high benefits estimates utilize projections of energy prices from the *AEO2014* reference case, low estimate, and high estimate, respectively.

** The CO_2 values represent global monetized values of the SCC, in 2014$, in 2015 under several scenarios of the updated SCC values. The first three cases use the averages of SCC distributions calculated using 5 percent, 3 percent, and 2.5 percent discount rates, respectively. The fourth case represents the 95th percentile of the SCC distribution calculated using a 3 percent discount rate.

† The lower value of the range represents costs associated with the Sourced Components conversion cost scenario. The upper value represents costs for the Fabricated Components scenario.

‡ Total benefits for both the 3 percent and 7 percent cases are derived using the series corresponding to the average SCC with 3 percent discount rate. In the rows labeled "7% plus CO_2 range" and "3% plus CO_2 range," the operating cost and NO_X benefits are calculated using the labeled discount rate, and those values are added to the full range of CO_2 values. Manufacturer Conversion Costs are not included in the Net Benefits calculations.

DOE has tentatively concluded that the proposed standards represent the maximum improvement in energy efficiency that is technologically feasible and economically justified, and would result in the significant conservation of energy. DOE further notes that products achieving these standard levels are already commercially available for the product classes covered by this proposal. See chapter 8 of the NOPR technical support document (TSD) for more discussion of the no-new-standards case efficiency distribution. Based on DOE's analyses, DOE has tentatively concluded that the benefits of the proposed standards to the nation (energy savings, water savings, positive NPV of consumer benefits, consumer LCC savings, and emission reductions) would outweigh the burdens (loss of INPV for manufacturers).

DOE also considered both more and less stringent energy efficiency levels (EL) as trial standard levels (TSL), and will continue to consider them in this rulemaking. However, DOE has tentatively concluded that the potential burdens of the more stringent energy efficiency levels would outweigh the projected benefits. Based on consideration of the public comments DOE receives in response to this notice and related information collected and analyzed during the course of this rulemaking effort, DOE may adopt energy efficiency levels presented in this notice that are either higher or lower than the proposed standards, or some combination of levels that incorporate the proposed standards in part.

II. Introduction

The following section discusses the statutory authority underlying this proposal, as well as some of the relevant historical background related to the establishment of standards for commercial prerinse spray valves.

A. Authority

Title III, Part B of the Energy Policy and Conservation Act of 1975 (EPCA), Public Law 94–163 (42 U.S.C. 6291–6309, as codified) established the Energy Conservation Program for Consumer Products Other Than Automobiles. As part of this program, EPCA prescribed energy conservation standards for commercial prerinse spray valves. (42 U.S.C. 6295(dd)) Under 42 U.S.C. 6295(m), DOE must periodically review its already established energy conservation standards for a covered product. DOE is undertaking this rulemaking to meet this EPCA requirement.

Pursuant to EPCA, DOE's energy conservation program for covered products consists essentially of four parts: (1) Testing, (2) labeling, (3) the establishment of Federal energy conservation standards, and (4) certification and enforcement procedures. The Secretary or the Federal Trade Commission, as appropriate, may prescribe labeling requirements for commercial prerinse spray valves. (42 U.S.C. 6294(a)(5)(A)) Subject to certain criteria and conditions, DOE is required to develop test procedures to measure the energy efficiency, energy use, or estimated annual operating cost of each covered product. (42 U.S.C. 6293(b)(3)) Manufacturers of covered products must use the prescribed DOE test procedure as the basis for certifying to DOE that their products comply with the applicable energy conservation standards adopted under EPCA and when making representations to the public regarding the energy use or efficiency of those products. (42 U.S.C. 6293(c) and 6295(s)) Similarly, DOE must use these test procedures to determine whether the products comply with standards adopted pursuant to EPCA. (42 U.S.C. 6295(s)) The DOE test procedure for commercial prerinse spray valves currently appears at title 10 of the Code of Federal Regulations (CFR) part 431, subpart O. DOE recently proposed updates to its CPSV test procedure in a proposed rule issued for prepublication on June 05, 2015 (80 FR 35874).

DOE must follow specific statutory criteria for prescribing amended standards for covered products. As indicated previously, any amended standard for a covered product must be designed to achieve the maximum improvement in energy efficiency that is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A)) Furthermore, DOE may not adopt any standard that would not result in the significant conservation of energy. (42 U.S.C. 6295(o)(3)(B)) Moreover, DOE may not prescribe a standard for certain products, including commercial prerinse spray valves, if no test procedure has been established for the product. (42 U.S.C. 6295(o)(3)(A))

In deciding whether a proposed standard is economically justified, DOE must determine whether the benefits of the standard exceed its burdens. (42 U.S.C. 6295(o)(2)(B)(i)) DOE must make this determination after receiving comments on the proposed standard, and by considering, to the greatest extent practicable, the following seven factors:

(1) The economic impact of the standard on manufacturers and consumers of the products subject to the standard;

(2) The savings in operating costs throughout the estimated average life of the covered products in the type (or class) compared to any increase in the price, initial charges, or maintenance expenses for the covered products that are likely to result from the imposition of the standard;

(3) The total projected amount of energy, or as applicable, water, savings likely to result directly from the imposition of the standard;

(4) Any lessening of the utility or the performance of the covered products likely to result from the imposition of the standard;

(5) The impact of any lessening of competition, as determined in writing by the Attorney General, that is likely to result from the imposition of the standard;

(6) The need for national energy and water conservation; and

(7) Other factors the Secretary of Energy (Secretary) considers relevant. (42 U.S.C. 6295(o)(2)(B)(i)(I) through (VII))

EPCA, as codified, also contains what is known as an ''anti-backsliding'' provision, which prevents the Secretary from prescribing any amended standard that either increases the maximum allowable energy use or decreases the minimum required energy efficiency of a covered product. (42 U.S.C. 6295(o)(1)) Also, the Secretary may not prescribe an amended or new standard if interested persons have established by a preponderance of the evidence that the standard is likely to result in the unavailability in the United States of any covered product type (or class) of performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as those generally available in the United States at the time of the Secretary's finding. (42 U.S.C. 6295(o)(4))

Further, EPCA, as codified, establishes a rebuttable presumption that a standard is economically justified if the Secretary finds that the additional cost to the consumer of purchasing a product complying with an energy conservation standard level will be less than three times the value of the energy and water savings the consumer will receive during the first year that the standard applies, as calculated under the applicable test procedure. (42 U.S.C. 6295(o)(2)(B)(iii))

Additionally, 42 U.S.C. 6295(q)(1) specifies requirements when promulgating a standard for a type or class of covered products that has two or more subcategories. DOE must specify a different standard level than that which applies generally to such type or class of products for any group of covered products that have the same function or intended use if DOE determines that products within such group: (1) Consume a different kind of energy from that consumed by other covered products within such type (or class); or (2) have a capacity or other performance-related feature which other products within such type (or class) do not have and such feature justifies a higher or lower standard. (42 U.S.C. 6294(q)(1)) In determining whether a performance-related feature justifies a different standard for a group of products, DOE shall consider such factors as the utility to the consumer of the feature and other factors DOE deems appropriate. *Id.* Any rule prescribing such a standard must include an explanation of the basis on which such higher or lower level was established. (42 U.S.C. 6295(q)(2))

Federal energy conservation requirements generally supersede State laws or regulations concerning energy conservation testing, labeling, and standards. (42 U.S.C. 6297(a) though (c)) California, however, has a statutory exemption to preemption for commercial prerinse spray valve standards adopted by the California Energy Commission before January 1, 2005. (42 U.S.C. 6297(c)(7)) As a result, while federal commercial prerinse spray valve standards, including any amended standards that may result from this rulemaking, apply in California, California's commercial prerinse spray valve standards also apply as they are exempt from preemption. DOE may also grant waivers of Federal preemption for particular State laws or regulations, in accordance with the procedures and other provisions set forth under EPCA. (42 U.S.C. 6297(d))

Finally, pursuant to the amendments contained in the Energy Independence and Security Act of 2007 (EISA 2007), Public Law 110–140, any final rule for new or amended energy conservation standards promulgated after July 1, 2010, is required to address standby mode and off mode energy use. (42 U.S.C. 6295(gg)(3)) Specifically, when DOE adopts a standard for a covered product after that date, it must, if justified by the criteria for adoption of standards under EPCA (42 U.S.C. 6295(o)), incorporate standby mode and off mode energy use into the standard, or, if that is not feasible, adopt a separate standard for such energy use for that product. (42 U.S.C. 6295(gg)(3)(A) and (B)) DOE's current test procedures and standards for commercial prerinse spray valves do not address standby mode and off mode energy use, which are not applicable for this product. Similarly, in this rulemaking, DOE only addresses active mode energy consumption because commercial prerinse spray valves only consume energy and water in active mode.

B. Background

In a final rule published on October 18, 2005 (''2005 CPSV final rule''), DOE codified the current energy conservation standards for commercial prerinse spray valves that were prescribed by the Energy Policy Act of 2005, Public Law 109–58 (August 8, 2005). 70 FR 60407, 60410. The 2005 CPSV final rule established that all commercial prerinse spray valves manufactured on or after January 1, 2006, must have a flow rate of not more than 1.6 gpm.

DOE is conducting the current energy conservation standards rulemaking pursuant to 42 U.S.C. 6295(m), which requires that within 6 years of issuing any final rule establishing or amending a standard, DOE shall publish either a notice of determination that amended standards are not needed or a NOPR proposing amended standards.

DOE initiated the current rulemaking on September 11, 2014, by issuing an analytical Framework document, ''Rulemaking Framework for Commercial Prerinse Spray Valves'' (''2014 Framework document''), which described the procedural and analytical approaches DOE anticipated using to evaluate energy conservation standards for commercial prerinse spray valves. 79 FR 54213. DOE also announced a public meeting to discuss the proposed analytical framework for the rulemaking and invited written comments from the public. 79 FR 54213. The 2014 Framework document is available at: *www.regulations.gov/#!documentDetail;D=EERE-2014-BT-STD-0027-0001.*

The 2014 Framework document explained the issues, analyses, and process that DOE anticipated using to develop energy conservation standards for commercial prerinse spray valves. DOE held a public meeting on September 30, 2014, to solicit comments from interested parties regarding DOE's analytical approach. Comments received in response to DOE's proposed analytical approach have helped DOE identify and resolve issues relevant to energy conservation standards for commercial prerinse spray valves, and have informed the analyses presented in this notice. DOE discusses and responds to the comments received in response to the 2014 Framework document in section IV.

III. General Discussion

A. Product Classes and Scope of Coverage

EPCA defines the term ''commercial prerinse spray valve'' as a ''handheld device designed and marketed for use with commercial dishwashing and ware washing equipment that sprays water on dishes, flatware, and other food service items for the purpose of removing food residue before cleaning the items.'' (42 U.S.C. 6291(33)(A) In the 2015 CPSV test procedure NOPR, DOE is proposing to modify the CPSV definition to redefine the scope of coverage, as authorized under 42 U.S.C. 6291(33)(B). For specific details on the proposed modifications to the CPSV definition, including how to submit comments see the test procedure NOPR (80 FR 35874).

When evaluating and establishing energy conservation standards, DOE divides covered products into product classes by the type of energy used, or by capacity or other performance-related features that justify a different standard. In making a determination whether a performance-related feature justifies a different standard, DOE considers such factors as the utility of the feature to the consumer and other factors DOE determines are appropriate. (42 U.S.C. 6295(q)) Different energy conservation standards may apply to different product classes.

Currently, all covered commercial prerinse spray valves are included in a single product class that is subject to a 1.6-gpm standard for maximum flow rate. 10 CFR 431.266. In the 2014 Framework document, DOE considered whether to retain a single product class for all commercial prerinse spray valves, or to establish separate product classes based on the statutory criteria in 42 U.S.C. 6295(q) and comments from interested parties. See sections IV.A.2 and IV.C.2 for more discussion on the product classes addressed in this NOPR.

B. Test Procedure

EPCA established the current maximum flow rate for commercial prerinse spray valves and prescribed an industry test procedure, American Society for Testing and Materials (ASTM) Standard F2324–03, to measure the flow rate. (42 U.S.C. 6295(dd), 42 U.S.C. 6293(b)(14)) In a final rule published December 8, 2006, DOE incorporated by reference ASTM Standard F2324–03 under 10 CFR 431.263, and prescribed it as the uniform test method to measure the flow rate of commercial prerinse spray valves under 10 CFR 431.264. 71 FR 71340, 71374. In a final rule published October 23, 2013, DOE incorporated by reference ASTM Standard F2324–03 (2009) for testing commercial prerinse spray valves, which updated the 2003 version. 78 FR 62970, 62980.

In 2013, ASTM amended Standard F2324–03 (2009) to replace the cleanability test with a spray force test, based on research conducted by the U.S. Environmental Protection Agency's (EPA) WaterSense® program.[17]

In the 2015 CPSV test procedure NOPR, DOE proposed to incorporate by reference the amended ASTM Standard F2324–13. Additionally, DOE proposed requiring spray force to be measured based on the procedure in ASTM Standard F2324–13. For commercial prerinse spray valves with multiple spray patterns, DOE proposed that both flow rate and spray force be measured for each possible spray pattern.

C. Technological Feasibility

In each energy conservation standards rulemaking, DOE conducts a screening analysis based on information gathered on all current technology options and working prototype designs that could improve the efficiency of the products that are the subject of the rulemaking. As the first step in such an analysis, DOE develops a list of technology options for consideration in consultation with manufacturers, design engineers, and other interested parties. DOE then determines which of those options are technologically feasible. DOE considers technologies incorporated in commercially available products or in working prototypes to be technologically feasible. 10 CFR part 430, subpart C, appendix A, section 4(a)(4)(i).

After DOE has determined that particular technology options are technologically feasible, it further evaluates each technology option in light of the following additional screening criteria: (1) Practicability to manufacture, install, and service; (2) adverse impacts on product utility or availability; and (3) adverse impacts on health or safety. 10 CFR part 430, subpart C, appendix A, section 4(a)(4)(ii) through (iv). Section IV.B of this notice discusses the results of the screening analysis for commercial prerinse spray valves, particularly the

[17] EPA WaterSense program, *WaterSense Specification for Commercial Prerinse Spray Valves Supporting Statement,* Version 1.0 (Sept. 19, 2013) (Available at: *http://www.epa.gov/watersense/partners/prsv_final.html*).

technology options DOE considered, those it screened out, and those that are the basis for the TSLs in this rulemaking. For further details on the screening analysis for this rulemaking, see chapter 4 of the NOPR Technical Support Document (TSD).

When DOE proposes to adopt an amended standard for a type or class of covered products, it must determine the maximum improvement in energy efficiency or maximum reduction in energy use that is technologically feasible for such products. (42 U.S.C. 6295(p)(1)) Accordingly, in the engineering analysis, DOE determined the maximum technologically feasible (''max-tech'') improvements in energy efficiency for commercial prerinse spray valves, using the design parameters for the most efficient products available on the market or in working prototypes. The max-tech levels that DOE determined for this rulemaking are described in chapter 5 of the NOPR TSD.

D. Energy Savings

1. Determination of Savings

For each TSL, DOE projected energy savings from the commercial prerinse spray valves purchased in the 30-year period that begins in the expected year of compliance with any amended standards (2019–2048). The savings are measured over the entire lifetime of commercial prerinse spray valves purchased in the 30-year analysis period. DOE quantified the energy savings attributable to each TSL as the difference in energy consumption between each standards case and the no-new-standards case. The no-new-standards case represents a projection of energy consumption in the absence of amended mandatory efficiency standards, and it considers market forces and policies that may affect future demand for more efficient products.

DOE used its national impact analysis (NIA) spreadsheet model to estimate energy savings from amended standards. The NIA spreadsheet model (described in section IV.H of this notice) calculates energy savings in site energy, which is the energy consumed by a product at the location where it is used. For electricity, DOE calculates national energy savings in terms of primary energy savings, which is the savings in the energy that is used to generate and transmit the site electricity. To calculate primary energy savings, DOE derived annual conversion factors from the model used to prepare the Energy Information Administration's (EIA) *Annual Energy Outlook 2014* (*AEO2014*).[18]

For electricity and natural gas and oil, DOE also calculates full-fuel-cycle (FFC) energy savings. As discussed in DOE's statement of policy and notice of policy amendment, the FFC metric includes the energy consumed in extracting, processing, and transporting primary fuels (*i.e.,* coal, natural gas, petroleum fuels), and thus presents a more complete picture of the impacts of energy efficiency standards. 76 FR 51281 (August 18, 2011), as amended at 77 FR 49701 (August 17, 2012). For FFC energy savings, DOE's approach is based on the calculation of an FFC multiplier for each of the energy types used by covered products. For more information, see section IV.H.1 of this notice.

2. Significance of Savings

To adopt more stringent standards for a covered product, DOE must determine that such action would result in ''significant'' energy savings. (42 U.S.C. 6295(o)(3)(B)) Although the term ''significant'' is not defined in EPCA, the U.S. Court of Appeals for DC Circuit, in *Natural Resources Defense Council* v. *Herrington,* 768 F.2d 1355, 1373 (D.C. Cir. 1985), indicated that Congress intended ''significant'' energy savings in the context of EPCA to be savings that were not ''genuinely trivial.'' The energy savings for the proposed standards (presented in section V.B.3.a of this notice) are nontrivial, and, therefore, DOE considers them ''significant'' within the meaning of section 325 of EPCA.

E. Economic Justification

EPCA provides seven factors to be evaluated in determining whether a potential energy conservation standard is economically justified. (42 U.S.C. 6295(o)(2)(B)(i)) The following sections discuss how DOE has addressed each of those seven factors in this rulemaking.

1. Economic Impact on Manufacturers and Consumers

In determining the impacts of a potential amended standard on manufacturers, DOE conducts a manufacturer impact analysis (MIA), as discussed in section IV.J. DOE first uses an annual cash-flow approach to determine the quantitative impacts. This step includes both a short-term assessment—based on the cost and capital requirements during the period between when a regulation is issued and when entities must comply with the regulation—and a long-term assessment over a 30-year period. The industry-wide impacts analyzed include: (1) INPV, which values the industry on the basis of expected future cash flows, (2) cash flows by year, (3) changes in revenue and income, and (4) other measures of impact, as appropriate. Second, DOE analyzes and reports the impacts on different types of manufacturers, including impacts on small manufacturers. Third, DOE considers the impact of standards on domestic manufacturer employment and manufacturing capacity, as well as the potential for standards to result in plant closures and loss of capital investment. Finally, DOE takes into account cumulative impacts of various DOE regulations and other regulatory requirements on manufacturers.

For individual consumers, measures of economic impact include the changes in LCC and PBP associated with new or amended standards. These measures are discussed further in the following section. For consumers in the aggregate, DOE also calculates the national net present value of the economic impacts applicable to a particular rulemaking. DOE also evaluates the LCC impacts of potential standards on identifiable subgroups of consumers that may be affected disproportionately by a national standard.

2. Savings in Operating Costs Compared to Increase in Price

EPCA requires DOE to consider the savings in operating costs throughout the estimated average life of the covered product compared to any increases in the price of the covered products that are likely to result from the imposition of the standard. (42 U.S.C. 6295(o)(2)(B)(i)(II)) DOE conducts this comparison in its LCC and PBP analysis.

The LCC is the sum of the purchase price of a product (including its installation) and the operating expense (including water, energy, maintenance, and repair expenditures) discounted over the lifetime of the product. The LCC and PBP analysis requires a variety of inputs, such as product prices, product water and energy consumption, water and sewer prices, energy prices, maintenance and repair costs, product lifetime, and consumer discount rates. To account for uncertainty and variability in specific inputs, such as product lifetime and discount rate, DOE uses a distribution of values, with probabilities attached to each value. For its analysis, DOE assumes that consumers will purchase the covered

[18] U.S. Department of Energy—Energy Information Administration, *Annual Energy Outlook 2014 with Projections to 2040 (Available at: www.eia.gov/forecasts/aeo/).*

product in the first year of compliance with amended standards.[19]

The LCC savings for the considered efficiency levels are calculated relative to a no-new-standards case that reflects projected market trends in the absence of amended standards. DOE identifies the percentage of consumers estimated to receive LCC savings or experience a LCC increase, in addition to the average LCC savings associated with a particular standard level. DOE's LCC and PBP analysis is discussed in further detail in section IV.F of this notice.

3. Energy Savings

EPCA requires DOE, in determining the economic justification of a standard, to consider the total projected energy savings that are expected to result directly from the standard. (42 U.S.C. 6295(o)(2)(B)(i)(III)) As discussed in section IV.H.1, DOE uses spreadsheet models to project national energy savings.

4. Lessening of Utility or Performance of Products

In determining whether a proposed standard is economically justified, DOE evaluates any lessening of the utility or performance of the considered products. (42 U.S.C. 6295(o)(2)(B)(i)(IV)) Based on data available to DOE, the standards proposed in this notice would not reduce the utility or performance of the products under consideration in this rulemaking.

5. Impact of Any Lessening of Competition

EPCA directs DOE to consider the impact of any lessening of competition, as determined in writing by the Attorney General, that is likely to result from a proposed standard. (42 U.S.C. 6295(o)(2)(B)(i)(V)) DOE will transmit a copy of this proposed rule to the Attorney General with a request that the Department of Justice (DOJ) provide its determination to the Secretary within 60 days of the publication of a proposed rule, together with an analysis of the nature and extent of the impact. (42 U.S.C. 6295(o)(2)(B)(ii)). DOE will publish and respond to the Attorney General's determination in the final rule.

6. Need for National Energy Conservation

DOE also considers the need for national energy conservation in determining whether a new or amended standard is economically justified. (42 U.S.C. 6295(o)(2)(B)(i)(VI)) The energy savings from the proposed standards are likely to provide improvements to the security and reliability of the nation's energy system. Reductions in the demand for electricity may also result in reduced costs for maintaining the reliability of the nation's electricity system. DOE conducts a utility impact analysis to estimate how standards may affect the nation's needed power generation capacity, as discussed in section IV.M.

The proposed standards also are likely to result in environmental benefits in the form of reduced emissions of air pollutants and greenhouse gases associated with energy production and use. DOE conducts an emissions analysis to estimate how standards may affect these emissions and reports the emissions impacts from each TSL it considered in section V.B.6. DOE also reports estimates of the economic value of emissions reductions resulting from the considered TSLs in section IV.L.

7. Other Factors

EPCA allows the Secretary of Energy, in determining whether a standard is economically justified, to consider any other factors that the Secretary deems to be relevant. (42 U.S.C. 6295(o)(2)(B)(i)(VII)) To the extent that interested parties submit any relevant information regarding economic justification that does not fit into the other categories described in the previous sections, DOE could consider such information under ''other factors.''

F. Rebuttable Presumption

As set forth in 42 U.S.C. 6295(o)(2)(B)(iii), EPCA creates a rebuttable presumption that an energy conservation standard is economically justified if the additional cost to the consumer of a product that meets the standard is less than three times the value of the first year's energy savings resulting from the standard, as calculated under the applicable DOE test procedure. DOE's LCC and PBP analyses generate values used to calculate the effects that proposed energy conservation standards would have on the PBP for consumers. These analyses include, but are not limited to, the 3-year PBP contemplated under the rebuttable-presumption test. The rebuttable presumption payback calculation is discussed in section IV.F.11 of this proposed rule.

IV. Methodology and Discussion of Related Comments

DOE used several spreadsheet tools to estimate the impact of the proposed standards. One of these spreadsheet tools calculates LCCs and PBPs of potential amended energy conservation standards. Another provides shipments forecasts and then calculates impacts of potential standards on national energy savings and net present value. The Department also assessed manufacturer impacts, largely through the use of the Government Regulatory Impact Model (GRIM) spreadsheet tool. The spreadsheets are available online at: *www1.eere.energy.gov/buildings/appliance_standards/rulemaking.aspx?ruleid=100*.

Additionally, DOE estimated the impacts of amended standards for commercial prerinse spray valves on utilities and the environment. DOE used a version of EIA's National Energy Modeling System (NEMS) for the utility and environmental analyses.[20] The NEMS model simulates the energy sector of the U.S. economy. EIA uses NEMS to prepare its *Annual Energy Outlook,* a widely known baseline energy forecast for the United States. The version of NEMS used for appliance standards analysis, which makes minor modifications to the *AEO* version, is called NEMS–BT.[21] NEMS–BT accounts for the interactions among the various energy supply and demand sectors and the economy as a whole.

A. Market and Technology Assessment

DOE develops information in the market and technology assessment that provides an overall picture of the market for the product concerned, including the purpose of the product, the industry structure, manufacturers, market characteristics, and technologies used in the product. This activity includes both quantitative and qualitative assessments, based primarily on publicly-available information. The subjects addressed in the market and technology assessment for this commercial prerinse spray valves

[19] Because the anticipated compliance date is late in the expected compliance year, 2018, for analytical purposes, DOE assumes that customers will purchase the CPSV equipment that meets the potential amended standards in 2019. In other words, the first year of the analysis period is 2019.

[20] For more information on NEMS, refer to the U.S. Department of Energy, Energy Information Administration documentation. A useful summary is *National Energy Modeling System: An Overview 2009,* DOE/EIA–0581(2009) (October 2009) (Available at: *http://www.eia.doe.gov/oiaf/aeo/overview/index.html*).

[21] EIA approves the use of the name ''NEMS'' to describe only an *AEO* version of the model without any modification to code or data. Because the present analysis entails some minor code modifications and runs the model under various policy scenarios that deviate from *AEO* assumptions, the name ''NEMS–BT'' refers to the model as used here. (BT stands for DOE's Building Technologies Office.)

rulemaking include: (1) Market assessment, (2) efficiency metrics, (3) product classes, and (4) technology assessment. The key findings of DOE's market assessment are summarized in the following sections. See chapter 3 of the NOPR TSD for further discussion of the market and technology assessment.

1. Market Assessment

As part of the market assessment, DOE examined manufacturers, trade associations, and the quantities and types of products sold and offered for sale. DOE reviewed relevant literature to develop an understanding of the CPSV industry in the United States, including market research data, government databases, retail listings, and industry publications (*e.g.,* manufacturer catalogs). Using this information, DOE assessed the overall state of the industry, CPSV manufacturing and market shares, shipments, general technical information on commercial prerinse spray valves, and industry trends.

In the Framework document, DOE sought comments regarding the market for commercial prerinse spray valves, and in particular on product features, market shares, and trends. Additionally, DOE also sought comments on which organizations had a vested interest in commercial prerinse spray valves. DOE recognized Plumbing Manufacturers International (PMI) and North American Association of Food Equipment Manufacturers (NAFEM) in the Framework document as organizations that have an interest in commercial prerinse spray valves. In addition to these trade organizations, T&S Brass suggested including the National Restaurant Association (NRA) as an organization that has an interest in commercial prerinse spray valves. (T&S Brass, Public Meeting Transcript, No. 6 at p. 30) [22] Additionally, the International Association of Plumbing and Mechanical Officials (IAMPO) commented that it tests and certifies commercial prerinse spray valves to make sure they meet mandated levels. Hence, IAMPO is also a body that has an interest in commercial prerinse spray valves. (IAPMO, Public Meeting Transcript, No. 6 at p. 30) Alliance for Water Efficiency (AWE) recommended that DOE consider service companies, such as Ecolab, as a subtype in its list of retailers. It stated that such companies provide on-demand, on-site maintenance and other services to food service operators, and have the most influence over the selection of commercial prerinse spray valves at the restaurant site. (AWE, No. 8 at p. 2) DOE acknowledges and appreciates the information provided by these interested parties.

Commenting on the commercial prerinse spray valve industry in general, T&S Brass stated that a small number of manufacturers control the majority of the market because commercial prerinse spray valves are a niche product. Two or three manufacturers have the majority of the market share. Most of the manufacturers in the industry are family-owned businesses. (T&S, Public Meeting Transcript, No. 6 at p. 58)

DOE also held phone conversations with representatives from the EPA WaterSense® program regarding the market assessment.[23] The representatives commented that the industry comprises a small number of CPSV manufacturers, most of which are private companies which do not readily provide market information.

DOE researched government databases for CPSV product listings, including DOE's Compliance Certification Management System (CCMS), the California Energy Commission (CEC) Appliance Database, and the WaterSense database. Based on this research, DOE concluded that the CPSV market includes 54 basic models from 13 different brands and 11 manufacturers. Chapter 3 provides more details on the CPSV market.

2. Efficiency Metrics

Currently, all covered commercial prerinse spray valves are included in a single product class that is subject to a 1.6 gpm standard for maximum flow rate. 10 CFR 431.266. As part of the 2014 Framework document, DOE considered adopting an alternative metric to replace the existing flow rate (gpm) metric. DOE examined alternative metrics that could achieve energy and water savings while also preserving product functionality. In the 2014 Framework document, DOE presented two alternate metrics. One alternative metric under consideration was a performance metric that takes into account both flow rate and spray force (measured in gpm divided by ozf). Another metric considered was gallons per plate washed, which was calculated using the flow rate and the cleanability time, which is defined in ASTM Standard F2324–2003, as the ''effectiveness of the prerinse spray valve to remove soil from the plate before it is placed in a dishwashing machine.'' DOE requested comments from interested parties on these suggested alternate metrics.

A joint comment submitted by the Alliance to Save Energy, the Appliance Standards Awareness Project, and the Natural Resources Defense Council (''Advocates'') supported the consideration of a metric that incorporates both flow rate and spray force because this may allow DOE to adopt an amended standard that ensures functionality, while improving water and energy efficiency of commercial prerinse spray valves. In addition, the Advocates pointed out that a widely used industry standard, ASTM Standard F2324–13, already incorporates spray force measurement, and so a metric accounting for both flow rate and spray force would not cause additional burden to manufacturers listing products to the industry standard. (Advocates, No. 11 at p. 1) However, the Advocates also commented that product classes must be considered to distinguish between commercial prerinse spray valves and DOE could consider using spray force as one way to delineate separate product classes. (Advocates, No. 11 at p. 2)

A joint comment submitted by Pacific Gas and Electric Company (PG&E), Southern California Gas Company, San Diego Gas and Electric, and Southern California Edison (CA IOUs) urged DOE to consider a metric or a product classification structure that addresses product performance in addition to water consumption. The CA IOUs stated that if a single metric does not capture both performance and water consumption, the standard should be structured to preserve the primary function of the product while addressing water efficiency. (CA IOUs, No. 14 at p. 1)

The CA IOUs also urged DOE to consider user satisfaction when considering the metric, as some field surveys have shown that users that are dissatisfied with efficient commercial prerinse spray valves will substitute them with those that likely increase overall water consumption. Therefore, CA IOUs suggested either incorporating spray force into the metric, or alternatively, using spray force to establish product classes as a way to account for differentiating products. (CA IOUs, No. 14 at p. 1)

In terms of considering cleanability in the metric, the Advocates commented that they opposed using gallons per

[22] A notation in this form provides a reference for information that is in the docket of DOE's rulemaking to amend energy conservation standards for commercial prerinse spray valves. (Docket No. EERE–2014–BT–STD–0027, which is maintained at *www.regulations.gov*) This particular notation refers to a comment: (1) submitted by T&S Brass; (2) appearing in the Public Meeting Transcript, which is document number 6 of the docket; and (3) appearing on page 30 of that document.

[23] Information on the WaterSense program for commercial prerinse spray valves is available at *www.epa.gov/WaterSense/products/prsv.html.*

plate washed as a metric because of concerns about efficacy and replicability of cleanability testing. (Advocates, No. 11 at p. 1) CA IOUs also suggested that DOE consider not using the cleanability test given the problems with repeatability and little correlation to user satisfaction. (CA IOUs, No. 14 at p. 2) Additionally, AWE commented that the cleanability test was an unreliable indicator of top-performing products and was not easily repeatable in laboratories across North America. (AWE, No. 8 at p. 1)

Although the purpose of the rulemaking is to achieve water savings, DOE recognizes that the utility of commercial prerinse spray valves must also be ensured. DOE agrees with interested parties that there are specific applications for different commercial prerinse spray valves, and to preserve utility, another measure besides flow rate must be considered in the analysis. There was a consensus among interested parties not to include cleanability in the test method metric because of the issues regarding repeatability of test results. Additionally, interested parties stated that cleanability had little correlation to performance and user satisfaction. Therefore, DOE did not use cleanability in the analysis.

However, a majority of the interested parties supported including spray force in the analysis. Whereas some stakeholders suggested incorporating spray force as part of the water consumption metric, others commented that spray force can also be used as a characteristic to distinguish product classes. Based on the comments received, DOE proposes to retain flow rate (in gpm) as the efficiency metric, and to incorporate spray force as a characteristic to distinguish product classes. Because the industry currently uses flow rate as the efficiency metric, DOE will continue using this industry-accepted metric. However, to ensure that utility of the commercial prerinse spray valves is maintained, DOE proposes to use spray force as a characteristic to establish product classes. The following section provides further discussion on incorporating spray force as a characteristic to differentiate product classes.

3. Product Classes

As stated previously, all commercial prerinse spray valves are included in a single product class. In the 2014 Framework document, DOE also considered whether to establish separate product classes based on the statutory criteria in 42 U.S.C. 6295(q), and requested comments from interested parties.

The Advocates stated that separate product classes should be established to distinguish among commercial prerinse spray valves that fit different applications. The Advocates also stated that DOE should consider establishing product classes for commercial prerinse spray valves that would distinguish between valves designed and marketed for light duty, standard duty, and heavy-duty applications. (Advocates, No. 11 at p. 2) The CA IOUs also suggested that DOE should examine what applications do not require a higher flow rate for establishing product classes. (CA IOUs, No. 14 at p. 2)

NAFEM suggested evaluating the impacts of the rule on other applications where commercial prerinse spray valves are currently used. (NAFEM, No. 9 at p. 2) Similarly, T&S Brass commented that the applications of commercial prerinse spray valves could vary from rinsing to cleaning baked-on food, and that the different applications might require different spray forces. T&S Brass stated that it offers a variety of prerinse spray valves that have different design features based on end users' applications. (T&S Brass, Public Meeting Transcript, No. 6 at p. 40) T&S Brass also commented that nozzle design and spray pattern provide specific CPSV applications and performance and that consumers choose a commercial prerinse spray valve based on application by trying various designs and determining which commercial prerinse spray valve works best for their specified application. (T&S, No. 12 at p. 4) Additionally, T&S Brass commented that CPSV efficiency depends on water pressure, water temperature, duration, flow rate, spray patterns, and other factors, and that the end-user application will dictate several of these variables. (T&S, No. 12 at p. 6)

DOE agrees with interested parties that there are different applications of commercial prerinse spray valves, such as cleaning baked-on food and light rinsing. Therefore, commercial prerinse spray valves designed for heavy duty cleaning require a higher flow rate in order to achieve satisfactory cleaning performance compared to products designed for light rinsing. Therefore, to preserve consumer utility for all CPSV applications, DOE proposes to establish separate product classes for commercial prerinse spray valves.

To determine what criteria to use to establish the product classes, DOE presented several different CPSV characteristics in the 2014 Framework document and requested input from interested parties. DOE received input on whether cleanability, flow rate, and spray force are criteria that should be used to establish product classes.

a. Cleanability

T&S Brass stated that because cleanability depends on subjective features such as spray pattern, end-user's application, and duration, this characteristic should not be used to establish product classes. (T&S Brass, No. 12 at p. 4) AWE suggested that DOE develop a more viable cleanability test method than that in ASTM F2324–2003 if cleanability is to be used as the defining characteristic. (AWE, No. 8 at p. 2) CA IOUs suggested that DOE consider not using the cleanability test given the problems with repeatability and little correlation to user satisfaction. (CA IOUs, No. 14 at p. 2) T&S Brass commented that ultra-low-flow commercial prerinse spray valves are designed for applications that allow for minimum water consumption, and that cleanability using an ultra-low-flow commercial prerinse spray valve is not applicable to every CPSV application in the foodservice environment. (T&S Brass, No. 12 at p. 4)

Based on these comments, as well as ASTM's update of the F2324 standard (ASTM Standard F2324–13), which replaces the cleanability test with a spray force test, DOE is not considering using cleanability as a characteristic to define product classes.

b. Flow Rate

T&S Brass stated that flow rate is a useful characteristic to define product classes and that spray force is a related parameter that can be altered with the nozzle design. (T&S Brass, Public Meeting Transcript, No. 6 at p. 39) T&S Brass commented that the data for flow rates for commercial prerinse spray valves are available and verifiable because they are based upon consistent test methods of a national test standard. (T&S Brass, No. 12 at p. 3) T&S Brass suggested using three product classes: (1) An ultra low-flow commercial prerinse spray valve with a maximum flow rate of 0.8 gpm; (2) a low-flow commercial prerinse spray valve with flow rates of 0.8 to 1.28 gpm; and (3) a standard commercial prerinse spray valve with flow rates of 1.28 to 1.6 gpm. (T&S Brass, No. 12 at p. 3) T&S Brass stated that the 1.6 gpm class is currently called the EPAct 2005 class. The 1.28 gpm class is based on the WaterSense voluntary standard. The 0.80 gpm class represents a 50 percent reduction of the current DOE standard. (T&S Brass, Public Meeting Transcript, No. 6 at p. 54) However, the Advocates commented that if the metric is not changed from the current gpm, then including flow rate as a differentiator for product class would be inconsistent. (Advocates, Public Meeting Transcript, No. 6 at p. 38)

Additionally, T&S Brass commented that the performance of the maximum technologically feasible model (max-tech model) should not be evaluated solely based on flow rate. (T&S Brass, Public Meeting Transcript, No. 6 at p. 52) Also, as described in section IV.A.1, interested parties commented that for DOE to maintain the utility of the commercial prerinse spray valves, another measure besides flow rate must be considered in the analysis.

In the 2014 Framework document, DOE noted that it would be difficult to establish product classes based on flow rate if the flow rate efficiency metric was retained. For this rulemaking, DOE proposes to retain flow rate as the efficiency metric for commercial prerinse spray valves. Therefore, DOE is not considering flow rate as a characteristic to establish product classes.

c. Spray Force

As described in section IV.A.1, interested parties recommended that DOE incorporate spray force in the analysis. Additionally, the Northwest Energy Efficiency Alliance (NEEA) recommended that DOE investigate whether spray force and flow rate are directly proportional, and to investigate whether spray force is a good characteristic to predict the performance of a commercial prerinse spray valve. (NEEA, No. 13 at p. 2)

DOE investigated whether any relationship exists between spray force and flow rate. DOE tested multiple spray valves for both flow rate and spray force using the ASTM Standard F2324–13 test procedure. The test results showed a direct linear relationship between flow rate and spray force, such that higher flow rate corresponds to higher spray force. Additionally, DOE found literature online that supported the linear relationship between spray force and flow rate.[24] Chapter 3 of the NOPR TSD provides further discussion on this relationship.

Multiple interested parties also recommended the use of spray force to establish product classes. The Advocates suggested that spray force might be a suitable criterion to create product classes. (Advocates, No. 11 at p. 2) T&S Brass commented that there are several applications of commercial prerinse spray valves, and all might require different spray forces. (T&S Brass, Public Meeting Transcript, No. 6 at p. 39) AWE stated that spray force is a useful characteristic that could be used to define product classes. (AWE, No. 8 at p. 2) CA IOUs suggested using spray force to establish product classes as a way to account for differentiating products.

However, NEEA stated that establishing product classes based on spray force could overlook cleaning effectiveness. It stated that a solid water jet and pattern jet could have the same flow rate and spray force, but that the pattern jet would clean better than a solid jet, despite both having the same spray force. (NEEA, No. 13 at p. 2)

A WaterSense field study found that low water pressure, or spray force, is a source of user dissatisfaction. WaterSense evaluated 14 commercial prerinse spray valve models and collected 56 consumer satisfaction reviews, of which 9 were unsatisfactory. Seven of the nine unsatisfactory scores were attributed, among other factors, to the water pressure, or the user-perceived force of the spray.[25]

Based on all comments from interested parties, DOE recognizes that spray force is an important criterion for characterizing consumer utility and is directly correlated with flow rate. Therefore, DOE is proposing to use spray force as the criterion to establish product classes. The 2015 CPSV test procedure NOPR proposes to incorporate by reference ASTM Standard F2324–13, which includes a test method for measuring spray force.

DOE is proposing three product classes based on ranges of spray force: (1) light-duty (less than or equal to 5 ozf), (2) standard-duty (greater than 5 ozf but less than or equal to 8 ozf), and (3) heavy-duty (greater than than 8 ozf). The light-duty equipment class would be suitable for light rinsing purposes, the standard-duty product class would be suitable to clean wet foods, and the heavy-duty product class would be suitable to clean baked-on foods. DOE testing of commercial prerinse spray valves provided clear indication of three clusters of commercial prerinse spray valves within these spray force ranges. Chapter 3 of the NOPR TSD provides a detailed description of the product classes that DOE is proposing in this rulemaking.

d. Impact of Product Classes on Compliance, Certification and Enforcement

The procedures required for certification, determination, and enforcement of compliance of covered products with the applicable conservation standards are set forth in 10 CFR 429. The sampling plan and certification requirements for commercial prerinse spray valves are dictated in 10 CFR 429.51. DOE received comments from interested parties regarding the impact of product classes on product compliance, certification, and enforcement.

T&S Brass commented that the impact of assigning product classes should be considered with regard to the regulation and certification process. T&S Brass seeks clarification on how commercial prerinse spray valves will be certified (*e.g.,* through accredited third parties) in the future, if product classes will create more burden on manufacturers, and if it will be an additional requirement besides WaterSense certification. (T&S Brass, No. 12 at p. 8) T&S Brass also commented that there is a general lack of enforcement for manufacturers to file with DOE and that many imported products do not follow the federal regulations. (T&S, No. 12 at p. 8)

As described in this NOPR, DOE proposes to designate product classes based on ranges of spray force. In the concurrent 2015 CPSV test procedure NOPR, DOE is proposing that spray force be tested for each spray pattern. Therefore, DOE proposes to revise the certification reporting requirements under 10 CFR 429.51(b)(2) to include reporting the average spray force in ozf, in addition to reporting the average flow rate. The reported spray force will determine which product class applies to each certified basic model. As DOE understands that spray force is already a widely accepted and measured characteristic of commercial prerinse spray valves, DOE believes that adding the reporting requirement for spray force will not create significant additional burden for CPSV manufacturers.

DOE further notes that the WaterSense prerinse spray valve program is a voluntary program administered by EPA, and DOE's reporting and certification requirements for commercial prerinse spray valves would be separate from the requirements of the WaterSense program.

The Advocates noted that ASTM Standard F2324–13, which is being incorporated by reference in the concurrent 2015 CPSV test procedure

[24] Spraying Systems Co., ''Optimizing Your Spray System'' (2009) (Available at: *www.spray.com/Literature_PDFs/TM410A_Optimizing_Your_Spray_System.pdf);* PNR America, ''Some Uses of Spray Nozzles'' (Available at: *http://www.pnramerica.com/pdfs/p2_6.pdf*).

[25] EPA WaterSense, *Prerinse Spray Valves Field Study Report,* at 24–25 (Mar. 31, 2011) (Available at: *www.epa.gov/watersense/docs/final_epa_prsv_study_report_033111v2_508.pdf*).

NOPR (80 FR 35874), already incorporates spray force measurement, and so accounting for both flow rate and spray force would not cause additional burden to manufacturers listing products to the industry standard. (Advocates, No. 11 at p. 1) However, the Advocates also noted that it would be challenging to administer the separate product classes when commercial prerinse spray valves in a commercial kitchen are interchangeable, as many users have both heavy-duty and light-duty cleaning to perform. (Advocates, No. 11 at p. 2) The Advocates cautioned that enforcement issues should also be considered when considering spray force. (Advocates, No. 11 at p. 2)

While DOE administers the certification, determination, and enforcement of compliance of covered products, DOE does not administer the end-use of the covered products by the consumers. Under DOE enforcement activities, conservation standards cases deal with manufacturers that have distributed products in the U.S. that DOE has found do not meet the required energy standards. Compliance certification cases deal with manufacturers that either have not certified that the products that they manufacture and distribute in the U.S. have been tested and meet the applicable energy conservation standards or have submitted invalid compliance certifications. With respect to products certified to EPA's ENERGY STAR program, DOE refers to the EPA any products that DOE tests that do not meet the ENERGY STAR specification. Any complaints regarding non-compliant products can be sent to: *energyefficiencyenforcement@hq.doe.gov*.

4. Technology Assessment

In the technology assessment, DOE identifies technology options that may decrease CPSV water consumption. This assessment provides the technical background and structure on which DOE bases its screening and engineering analyses. In the 2014 Framework Document, DOE suggested an initial list of technology options that it would consider, which included the following:

- Addition of a flow control insert;
- Smaller nozzle tip openings to increase pressure;
- Incorporation of additional components including, but not limited to backflow preventers, additional valves, or hoses; and
- Specially designed spray patterns, such as the following: fan spray pattern (single nozzle with a hollow cone stream); solid stream pattern (single nozzle with single solid jet stream); triple-action spray pattern (three nozzles with solid jet streams); knife-like spray pattern (single nozzle with a flat stream); and rose spray pattern (multiple nozzles resembling a common showerhead).

DOE received several comments regarding the feasibility and impact of the technology options identified in the 2014 Framework document, which are discussed in the screening and engineering analyses in section IV.B and section IV.C, respectively. T&S Brass commented that there should not be too many design restrictions, as commercial prerinse spray valves are used in different applications, and, based on the application, the incorporation of certain design options might be required. (T&S Brass, Public Meeting Transcript, No. 6 at p. 44) T&S Brass also commented that the rulemaking should not stifle innovation. *Id.* AWE recommended that DOE not be design-restrictive, but focus on cleaning performance, water consumption, and durability of commercial prerinse spray valves for the rulemaking. (AWE, No. 8 at p. 2)

DOE notes that the proposed standard is a performance-based standard, not a design-based standard.

After further research regarding the potential technology options identified in the 2014 Framework document, DOE determined that several of them do not affect CPSV efficiency and thus are not considered to be technology options. The following subsections provide background on these product features that DOE determined had no impact on CPSV efficiency. The technology options that do affect CPSV efficiency are discussed further in section IV.B.

1. Backflow Preventers

Backflow preventers prevent reverse flow of water. They are mainly used in plumbing devices to protect water supplies from contamination or pollution. DOE did not identify any means by which incorporating a backflow preventers into a commercial prerinse spray valve could improve its efficiency by limiting the water flow rate.

2. Specially Designed Spray Patterns

In the 2014 Framework document, DOE identified five different spray patterns that are incorporated in commercial prerinse spray valves. DOE performed several tests on various CPSV units with different spray patterns using the ASTM Standard F2324–13 test procedure. While the units provided different flow rate and spray force results, DOE research showed no direct correlation between the type of spray pattern and flow rate. Hence, DOE found no indication that a different spray pattern can be used to reduce water consumption. Additionally, T&S Brass commented that different nozzle designs and spray patterns have been developed to meet the requirements for specific CPSV applications. (T&S Brass, No. 12 at p. 4) Hence, the type of spray pattern is more relevant to a specific CPSV application, rather than being a potential design option to reduce water consumption in commercial prerinse spray valves.

DOE did, however, identify additional CPSV technology options beyond those in the 2014 Framework document which could improve CPSV efficiency. The additional technology options analyzed include spray hole eccentricity and orifice plate nozzle geometry, and are discussed further in the section IV.B.

B. Screening Analysis

DOE uses the following four screening criteria to determine which technology options are suitable for further consideration in an energy conservation standards rulemaking:

(1) *Technological feasibility.* Technologies that are not incorporated in commercial products or in working prototypes will not be considered further.

(2) *Practicability to manufacture, install, and service.* If it is determined that mass production and reliable installation and servicing of a technology in commercial products could not be achieved on the scale necessary to serve the relevant market at the time of the projected compliance date of the standard, then that technology will not be considered further.

(3) *Impacts on product utility or product availability.* If it is determined that a technology would have significant adverse impact on the utility of the product to significant subgroups of consumers or would result in the unavailability of any covered product type with performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as products generally available in the United States at the time, it will not be considered further.

(4) *Adverse impacts on health or safety.* If it is determined that a technology would have significant adverse impacts on health or safety, it will not be considered further. 10 CFR part 430, subpart C, appendix A, 4(a)(4) and 5(b)

In response to the technology options presented in the 2014 Framework document, T&S Brass stated that design and technology aspects to improve

CPSV performance are considered proprietary information by manufacturers. (T&S Brass, No. 12 at p. 5) The Natural Resources Defense Council (NRDC) asked whether the spray patterns and associated nozzles used in the engineering analysis would be non-proprietary options. (NRDC, Public Meeting Transcript, No. 6 at p. 46).

In the engineering and economic analyses, DOE considered all design options that are commercially available or present in a working prototype, including proprietary designs that meet the screening criteria. DOE will consider a proprietary design, however, only if it does not represent a unique path to a given efficiency level. If the proprietary design is the only approach available to achieve a given efficiency level, then DOE will eliminate that efficiency level from further analysis. However, if a given energy efficiency level can be achieved by a number of design approaches, including a proprietary design, DOE will examine the given efficiency level, despite the proprietary nature of that one design.

Additionally, NAFEM stated that DOE's suggested design options in the 2014 Framework document fail to satisfy the criteria as specified in 10 CFR part 430, subpart C, appendix A, section 4(a)(4)(ii) through (iv). (NAFEM, No. 9 at p. 2) Sections 4(a)4(ii) through (iv) define three of the four screening criteria described previously, which are: Practicability to manufacture, install and service; adverse impacts on product or equipment utility or availability; and adverse impacts on health or safety. The technology options presented in the 2014 Framework document had not been screened using the four factors discussed above. For the analysis in this notice, DOE evaluated the technology options being considered in the engineering analysis based on the four screening criteria. While a majority of the technology options were not considered in the analysis because they failed to satisfy the screening criteria, there are several technology options that DOE believes satisfy the screening criteria, which are discussed in the following sections. Those technology options not screened out by the four criteria are called ''design options'' and are considered in the engineering analysis as possible methods of improving efficiency. The following sections describe which technology options were screened out, and which were included as design options.

1. Addition of Flow Control Insert

A flow control insert is a component that can be installed within certain plumbing products to limit the amount of water that flows out of the product. Several faucets and showerheads on the market use flow control inserts to reduce water consumption. Therefore, a flow control insert could also be used in other water products, like commercial prerinse spray valves, to control flow. However, T&S Brass commented that the addition of a flow control insert should not be considered as a design option. T&S reports that a flow control insert would hinder CPSV performance, and can often be physically removed by the end user. (T&S Brass, No. 12 at p. 5) Additionally, T&S Brass mentioned that the nozzle itself is what regulates the flow rate in commercial prerinse spray valves. (T&S Brass, No. 12 at p. 5)

Based on research, DOE did not identify any commercial prerinse spray valves on the market that use flow control inserts to regulate water flow. Therefore, because flow control inserts are not incorporated in commercially available products or working prototypes, DOE has screened out flow control inserts from its analysis because they are not technologically feasible.

2. Smaller Spray Hole Area

The spray hole(s) are located at the exterior of the commercial prerinse spray valve and allow water to flow out of the nozzle. The total spray hole area is the sum of all the areas of the individual spray holes. DOE determined that the flow rate and nozzle spray hole area are directly related. Additional technical details regarding this relationship are provided in chapter 5 of the TSD.

Given its relationship to flow rate, DOE identified nozzle spray hole area as an important factor to consider in the engineering analysis. Additionally, reducing the spray hole area is a relatively simple design change that satisfies the 4 screening criteria discussed above: (1) It is technologically feasible; (2) it would be practicable to manufacture, install, and service; (3) it would not have adverse impacts on product utility or availability;[26] and (4) it would not have adverse impacts on health and safety. Therefore, DOE will consider smaller nozzle tip openings, or a smaller nozzle spray hole area, as a design option in the engineering analysis.

3. Aerators

An aerator is a device that can be used to mix air with water, to reduce the flow of water from the device without reducing the water pressure. DOE is aware of only one commercial prerinse spray valve that incorporates an aerator. DOE tested this unit to determine how the aerator reduces water consumption. DOE testing indicated that the performance of this aerated unit differed substantially from the more common non-aerated units: It exhibited a very low spray force, and did not demonstrate the same linear relationship between flow rate and spray force that is typical of most other commercial prerinse spray valves that DOE tested. At the present time, DOE does not have enough information to determine (1) whether the addition of an aerator represents a technologically feasible design option for improving CPSV efficiency, or (2) whether aerators can be applied more generally to other CPSV designs. Therefore, DOE is tentatively screening out aerators from the analysis. DOE requests comment about its approach to screen out aerators in section V.E.14.

4. Additional Valves

Plumbing fixtures often use globe valves and butterfly valves to regulate water flow. Globe valves are comprised of a movable disk-like element and a stationary ring seated in a generally spherical body. The most common application of a globe valve is in a standard water faucet, such that when the handle is turned, a disc is lowered or raised. Butterfly valves regulate flow by means of a disc that rotates on an axis across the diameter of a pipe. Based on DOE's research to date, however, there are no commercially available products or working prototypes of commercial prerinse spray valves that use these additional valves. Additionally, T&S Brass also commented that the incorporation of additional components, such as backflow preventers, additional valves, or hoses, should not be considered as a design option because they are not necessarily aspects incorporated within the commercial prerinse spray valve itself. (T&S Brass, No. 12 at p. 5). DOE considers any component separate from the commercial prerinse spray valve to not be part of the covered product, and therefore not subject to evaluation as a design option. For these reasons, DOE has screened out the incorporation of additional valves from its analysis.

5. Changing Spray Hole Shape

DOE found evidence that spray hole shape affects flow rate. DOE found that commercial prerinse spray valves with circular holes have higher flow rates than commercial prerinse spray valves

[26] Although smaller spray hole area would result in lower flow rates and thus a lower amount of force, DOE's proposed revised product class structure would preserve product utility for heavy-duty applications.

with oval-shaped spray holes, if all other design elements are identical. Additionally, changing spray hole shape is a design change that satisfies the 4 screening criteria discussed above: (1) It is technologically feasible; (2) it would be practicable to manufacture, install, and service; (3) it would not have adverse impacts on product utility or availability; [27] and (4) it would not have adverse impacts on health and safety. Therefore, DOE will consider spray hole shape as a design option in the engineering analysis. Chapter 5 of the TSD provides further details on spray hole shape.

6. Venturi Meter to Orifice Plate Nozzle Geometries

DOE has observed that the nozzle geometry affects the flow rate of commercial prerinse spray valves. Based on DOE testing, reverse-engineering teardowns and information available in the literature, DOE has determined that a ''venturi meter'' geometry allows water to pass through the nozzle more easily than an ''orifice plate'' geometry. Therefore, if all other design elements are identical, commercial prerinse spray valves with an orifice plate geometry have a lower flow rate than commercial prerinse spray valves with a venture meter geometry. Additionally, changing spray nozzle geometry is a design change that satisfies the 4 screening criteria discussed above: (1) It is technologically feasible; (2) it would be practicable to manufacture, install, and service; (3) it would not have adverse impacts on product utility or availability; [28] and (4) it would not have adverse impacts on health and safety. Therefore, DOE will consider spray nozzle geometry as a design option in the engineering analysis. Chapter 5 of the TSD provides a more detailed discussion on this topic.

C. Engineering Analysis

In the engineering analysis, DOE establishes the relationship between the manufacturer production cost (MPC) and improved CPSV efficiency. This relationship serves as the basis for cost-benefit calculations for individual consumers, manufacturers, and the nation. DOE typically structures the engineering analysis using one of three approaches: (1) Design option, (2) efficiency level, or (3) reverse engineering (or cost assessment). The design-option approach involves adding the estimated cost and associated efficiency of various efficiency-improving design changes to the baseline to model different levels of efficiency. The efficiency-level approach uses estimates of costs and efficiencies of products available on the market at distinct efficiency levels to develop the cost-efficiency relationship. The reverse-engineering approach involves testing products for efficiency and determining cost from a detailed bill of materials (BOM) derived from reverse engineering representative products.

For this analysis, DOE structured its engineering analysis for commercial prerinse spray valves using a combination of the design-option approach and the reverse-engineering approach. The analysis is performed in terms of incremental decreases in water consumption due to the implementation of selected design options, while the estimated MPCs for each successive design option are based on product teardowns and a bottom-up manufacturing cost assessment. Using this hybrid approach, DOE developed the relationship between MPC and CPSV efficiency.

Chapter 5 of the NOPR TSD discusses the baseline efficiencies for each product class (in terms of flow rate), the design options DOE considered, the methodology used to develop manufacturing production costs, and the cost-efficiency curves. The LCC and PBP analysis uses the cost-efficiency relationships developed in the engineering analysis.

1. Engineering Approach

For each of the three proposed product classes, DOE selected a baseline efficiency (in terms of flow rate) as a reference point from which to measure changes resulting from each design option. DOE then developed separate cost-efficiency relationships for each product class analyzed. The following is a summary of the method DOE used to determine the cost-efficiency relationship for commercial prerinse spray valves:

(1) Perform flow rate and spray force tests on a representative sample of commercial prerinse spray valves in every product class.

(2) Develop a detailed BOM for the tested commercial prerinse spray valves through product teardowns, and construct a commercial prerinse spray valve cost model.

(3) Use the test data and cost model to calculate the incremental increase in efficiency (*i.e.,* decrease in flow rate) and cost increase of adding specific design options to a baseline model.

In the 2014 Framework document, DOE presented plans for its engineering analysis and sought comment on its approach to calculating the cost-efficiency relationship for commercial prerinse spray valves. T&S Brass stated that the range of efficiency levels should be determined based on the performance of commercial prerinse spray valves evaluated per ASTM Standard F2324–13. (T&S Brass, No. 12 at p. 5) DOE agrees that ASTM Standard F2324–13 reflects the latest changes in the industry and conducted all testing in support of this rulemaking using ASTM Standard F2324–13.

The CA IOUs recommended that DOE look at DOE's CCMS and the CEC appliance databases for available product data. The CA IOUs also provided separate charts that showed the range of flow rates from these databases; the ranges reported were from 0.65 to 1.48 gpm. (CA IOUs, No. 14 at p. 3) For the analysis, DOE used CCMS and CEC databases to incorporate product data for the analysis. Additionally, DOE looked at the EPA WaterSense database and the Food Service Technology Center (FSTC) commercial prerinse spray valves testing results to determine the flow rates and spray forces.

2. Product Classes

DOE is proposing three product classes, defined by spray force ranges, as shown in Table IV.1.

TABLE IV.1—PRODUCT CLASSES DEFINITIONS

Product class	Spray force range
Light-duty	≤ 5 ozf.
Standard-duty	> 5 ozf and ≤ 8 ozf.
Heavy-duty	> 8 ozf.

Chapter 3 of the NOPR TSD includes a detailed discussion regarding how the product classes were determined.

3. Baseline and Max-Tech Models

To analyze technology options for energy efficiency improvements, DOE defined a baseline model for each commercial prerinse spray valve product class. Typically, the baseline model is a model that just meets current energy conservation standards.

For the heavy-duty product class (spray force greater than 8 ozf), DOE determined that the baseline flow rate is the current commercial prerinse spray valve energy conservation standard of 1.6 gpm. For the standard-duty and

[27] Although smaller spray hole area would result in lower flow rates and thus a lower amount of force, DOE's proposed revised product class structure would preserve product utility for heavy-duty applications.

[28] Although an orifice plate geometry would result in lower flow rates and thus a lower amount of force, DOE's proposed revised product class structure would preserve product utility for heavy-duty applications.

light-duty product classes, DOE established baseline flow rates that correspond to upper spray force bounds of these two product classes. DOE determined these baseline flow rates using the linear relationship between flow rate and spray force. DOE determined a best-fit linear equation that related flow rate and spray force using the test results for all the commercial prerinse spray valves that DOE tested. DOE then calculated the flow rates that corresponded to the spray force bounds for the standard-duty and light-duty product classes using the best fit linear equation. Chapter 5 of the NOPR TSD provides more detail on the flow rate and spray force relationship.

T&S Brass cautioned against picking the highest efficiency level (max-tech) solely based on flow rate. T&S Brass commented that there are products on the market with a low flow rate that have an unsatisfactory user rating. T&S Brass suggested also looking at spray force when determining the max-tech model. According to T&S Brass, the current definition of the max-tech model solely based on flow rate may work in certain applications, but may work poorly for a standard market application. (T&S Brass, Public Meeting Transcript, No. 6 at p. 51) Additionally, T&S Brass also noted that the max-tech model in each product class may not adequately perform for all commercial foodservice applications. (T&S Brass, No. 12 at p. 6)

As described above, DOE proposes three product classes, defined by spray force ranges, which correspond to three major categories of CPSV usage (*i.e.* light-duty, standard-duty, and heavy-duty). Separating commercial prerinse spray valves into three product classes will ensure that consumer utility is maintained within each product class. DOE believes that the max-tech level selected for each product class would not reduce consumer utility for the applications associated with each spray force range.

To develop the relationships between flow rate and the design options for commercial prerinse spray valves, DOE used publicly available data, including data from government databases, manufacturer catalogs and Web sites, and selected product testing for commercial prerinse spray valves. The engineering analysis focused on identifying and evaluating commercially available prerinse spray valves that incorporate design options that reduce flow rate. The analysis also identified the lowest flow rate that is commercially available within each product class (*i.e.,* the max-tech model).

Additionally, DOE found that the spray nozzle geometry is a variable that affects flow rate. The nozzle geometry is expressed in terms of a discharge coefficient. DOE calculated the discharge coefficient for the max-tech model in each product class and assumed a constant discharge coefficient for each efficiency level within that class. DOE requests comments on whether this approach is appropriate.

Chapter 5 of the NOPR TSD includes details on the baseline flow rates and max-tech flow rates considered as part of the engineering analysis.

4. Manufacturing Cost Analysis

DOE estimated the manufacturing costs using a reverse-engineering approach, which involves a bottom-up manufacturing cost assessment based on a detailed BOM derived from teardowns of the product being analyzed. The detailed BOM includes labor costs, depreciation costs, utilities, maintenance, tax, and insurance costs, in addition to the individual component costs. These manufacturing costs are developed to be an industry average and do not take into account how efficiently a particular manufacturing facility operates.

To develop the relationship between cost and performance for commercial prerinse spray valves, DOE used a reverse-engineering analysis, or teardown analysis. DOE purchased off-the-shelf commercial prerinse spray valves available on the market and dismantled them component by component to determine what technologies and designs manufacturers use to decrease commercial prerinse spray valve flow rate. DOE then used independent costing methods, along with component-supplier data, to estimate the costs of the components.

T&S Brass stated that materials and processes for metallic, plastic, and rubber parts should be taken into consideration in the reverse-engineering process. (T&S Brass, No. 12 at p. 5) T&S Brass also commented that the costs for incremental efficiency improvements of existing commercial prerinse spray valve are different among manufacturers, or even among models from the same manufacturer. Therefore, the costs to improve efficiency depend on the design of commercial prerinse spray valve. (T&S Brass, No. 12 at p. 6)

DOE derived detailed manufacturing cost estimate data based on its reverse engineering analysis, which included the cost of the product components, labor, purchased parts and materials, and investment.

DOE tested three series of commercial prerinse spray valves from three manufacturers. Through testing, DOE found that the flow rates of the units within each series were different. However, based on the reverse-engineering analysis, the manufacturing costs for the units within each series were the same. Therefore, DOE concluded that there is no manufacturing cost difference for incremental efficiency improvements between models within the same series from the same manufacturer.

DOE also tested and performed a teardown analysis on commercial prerinse spray valves from additional manufacturers. These commercial prerinse spray valves represented a range of baseline to max-tech units. The testing and teardown results indicated that the manufacturing costs between different units from different manufacturers can vary based on the type of material, amount of material, and/or process used. However, DOE determined that these factors do not affect the efficiency of a commercial prerinse spray valve. Therefore, DOE did not include these cost differences in the engineering analysis. Chapter 5 of the NOPR TSD provides further details on the teardown analysis, component costs, and costs that were developed as part of the cost-efficiency curves.

D. Markups Analysis

The purpose of the markups analysis is to translate the MPC derived from the engineering analysis into the final consumer purchase price by applying the appropriate markups. The first step in this process is converting the MPC into the MSP by applying the manufacturer markup. The manufacturer markup includes sales, general and administrative, research and development, other corporate expenses, and profit. As described further in chapter 6 of the TSD, the manufacturer markup of 1.30 was calculated as the market share weighted average value for the industry. DOE developed this manufacturer markup by examining several major CPSV manufacturers' gross margin information from annual reports and Securities and Exchange Commission 10–K reports. Because the 10–K reports do not provide gross margin information at the subsidiary level, the estimated markups represent the average markups that the parent company applies over its entire range of equipment offerings, and does not necessarily represent the manufacturer markup of the subsidiary. Both the MPC and the MSP values are used in the MIA.

Next, DOE uses manufacturer-to-consumer markups to convert the MSP estimates into consumer purchase prices, which are then used in the LCC and PBP analysis, as well as the NIA. Consumer purchase prices are necessary for the baseline efficiency level and all other efficiency levels under consideration.

For the markups analysis, DOE identified the following distribution channels (*i.e.* how the product is distributed from the manufacturer to the consumer):

A. Manufacturer → Final Consumer (Direct Sales)
B. Manufacturer → Authorized Distributor → Final Consumer
C. Manufacturer → Retailer → Final Consumer
D. Manufacturer → Service Company → Final Consumer

During the Framework public meeting and public comment period, three comments were received with regard to distribution channels. T&S Brass commented that the trade associations did not maintain information on the percentage allocations among the various distribution channels. T&S Brass stated that such information was proprietary. (T&S Brass, Public Meeting Transcript, No. 6 at pp. 71–72) T&S Brass also noted that there were numerous combinations of entities making up the potential distribution channels, and the three listed by DOE (A through C, as listed above) are only but a subset of the potential channels. (T&S Brass, Public Meeting Transcript, No. 6 at pp. 70–71) Additionally, AWE commented that the dominant CPSV sales outlet is made up of service companies providing on-demand, on-site maintenance and other services to food service operators. (AWE, No. 8 at p. 2) As such, DOE added a fourth distribution channel (Service Company), in addition to the three discussed in the Framework document (Direct Sales, Authorized Distributor, and Retail Merchant). Beyond this, DOE did not attempt to incorporate additional channels or investigate combinations of the existing channels, because of a lack of specific information on distribution channels.

In the 2014 Framework document, DOE discussed both baseline and incremental markups. Baseline markups are multipliers that convert the MSP of products at the baseline efficiency level to consumer purchase price. Incremental markups are multipliers that convert the incremental increase in MSP for products at each higher efficiency level (compared to the MSP at the baseline efficiency level) to corresponding incremental increases in the consumer purchase price. In the analysis in this notice, DOE used only baseline markups, as the engineering analysis indicated that there is no price increase with improvements in efficiency for commercial prerinse spray valves. Chapter 6 of the NOPR TSD provides further details on the distribution channels and calculated markups.

E. Energy and Water Use Analysis

The purpose of the energy and water use analysis is to establish the annual energy and water consumption used by the product to assess the associated energy and water savings potential of different product efficiencies. To this end, DOE performed an energy and water use analysis that calculated energy and water use of commercial prerinse spray valves for each product class and efficiency level identified in the engineering analysis. The energy and water use analysis provided the basis for other analyses DOE performed, particularly the LCC and PBP analysis and the NIA.

In the 2014 Framework document, DOE indicated the analysis conducted for the NOPR is intended to capture and estimate water savings as a result of reduced flow rate and the related energy savings as a result of reduced hot water use. DOE calculated the energy and water use by determining the representative daily operating time of the product by major building types that contain commercial kitchens found in the Commercial Building Energy Consumption Survey (CBECS).[29] The daily commercial prerinse spray valve operating time was annualized based on operating schedules for each building type. Water use for each product class was determined by multiplying the annual operating time by the flow rate at an operating pressure of 60 pounds per square inch (psi) for each efficiency level.[30]

Energy use was calculated by multiplying the annual water use in gallons by the energy required to heat each gallon of water to an end-use temperature of 108 °F.[31] Cold water supply temperatures used in this calculation were derived for the nine U.S. census regions based on ambient air temperatures and hot water supply temperature was assumed to be 140 °F based on ASHRAE Standard 12–2000.[32] The proportion of buildings which used natural gas or electricity for water heating found in the CBECS database were multiplied by the energy consumption of each kind of water heater, taking into account the efficiency level of the product, to obtain the total energy consumption of each product class and efficiency level of commercial prerinse spray valves.

In response to the 2014 Framework document, DOE received several comments related to potential data sources for the energy and water use analysis. IAPMO asked whether the rulemaking team had coordinated with DOE's Water, Energy, and Technology team. (IAPMO, Public Meeting Transcript, No. 6 at pp. 77–78) WaterSense asked how DOE planned to collect data on CPSV operation. (WaterSense, Public Meeting Transcript, No. 6 at pp. 78–79) T&S Brass noted that operation data might be available through NAFEM and FSTC. (T&S Brass, Public Meeting Transcript, No. 6 at p. 80) Finally, AWE commented that it had data available on operating time and water temperature from California Urban Water Conservation Council (CUWCC) studies. (AWE, No. 8 at p.3)

In response to these comments, and as discussed above, DOE collected data from several end-use studies that measured operating time of commercial prerinse spray valves in field applications, such as restaurants and cafeteria settings. Data on water temperature measured in the field studies were also utilized by DOE to determine the hot water and end-use temperature.

Additionally, T&S Brass commented that operational patterns varied widely across applications that use CPSV products. The different operational patterns across applications are a result of such factors as the volume of dishwashing or ware washing (*i.e.,* number of pieces) requiring prerinsing, the rate at which dishwashing or ware washing needs to be done in order to return the commercial ware back into service, the difficulty in cleaning debris from the commercial ware, and operational patterns for product classes. T&S Brass added that these operational

[29] Survey data available at *www.eia.gov/consumption/commercial/data/2003/index.cfm.*

[30] DOE considered a range of operating pressures in the analysis to account for the variations in water pressure supplied to buildings across the country. Through a sensitivity analysis on the impacts of water pressure on the flow rate of the prerinse spray valve, DOE concluded that 60 psi is a representative water pressure for prerinse spray valves. DOE used flow rates at a water pressure of 60 psi for each efficiency level in the energy and water use analysis, which is further discussed in the energy and water use TSD chapter.

[31] End-use temperature was determined based on a review of several field studies. See chapter 7 of the NOPR TSD for a list of the field studies reviewed.

[32] *ASHRAE Standard 12–2000: Minimizing the Risk of Legionellosis Associated with Building Water Systems,* (February 2000).

patterns will vary in duration of usage, as flow rates change within each application. (T&S Brass, No. 12 at p. 6)

DOE acknowledges comments submitted by T&S Brass regarding varying operational spray patterns and considered the varying operational patterns across applications of commercial prerinse spray valves in the analysis for this notice. As described in further detail in chapter 7 of the NOPR TSD, DOE determined operational time for the product based on operational patterns of distinct building types that house commercial prerinse spray valves, including educational facilities, food retail, healthcare, lodging, and restaurants. Operational patterns taken into consideration for each building category included operating days per week, operating hours per day, and estimated daily number of meals served. DOE assumed the same operating time for different flow rates based on the conclusion of the EPA WaterSense field study that determined the flow rate of a CPSV did not significantly impact the operating time of the unit.[33]

T&S Brass also commented that potential energy savings due to a lower flow rate might be offset by using a higher water temperature that would create water savings, but not energy savings due to the increase in water temperature. (T&S, No. 12 at p. 8)

In regards to the comment submitted by T&S Brass, DOE assumed an end-use temperature of 108 °F based on measured temperatures in field studies for commercial prerinse spray valves of varying flow rates. The field studies demonstrated that the end-use temperature did not significantly vary with flow rate. Therefore, DOE tentatively concludes this temperature is a reasonable representation of the temperature used by the majority of CPSV consumers, regardless of the flow rate of the unit.

In response to the 2014 Framework document, NEEA commented that it had access to the data for utility programs in the Northwest. (NEEA, No. 13 at p. 2)

DOE appreciates the comment from NEEA regarding their access to regional utility program data. In the analysis for this NOPR, DOE utilized field studies and data that approximated national potable water supply temperatures and operational water temperatures.

F. Life-Cycle Cost and Payback Period Analysis

DOE conducted the LCC and PBP analysis to evaluate the economic impacts on individual consumers of potential amended energy conservation standards for commercial prerinse spray valves. The LCC is the total consumer expense over the life of the product, consisting of purchase and installation costs plus operating costs (expenses for energy and water use, maintenance, and repair). To compute the operating costs, DOE discounts future operating costs to the time of purchase and sums them over the lifetime of the product. The PBP is the estimated amount of time (in years) it takes consumers to recover the potential increased purchase cost (including installation) of more efficient products through lower operating costs. DOE calculates the PBP by dividing the change in purchase cost at higher efficiency levels by the change in annual operating cost for the year that new standards are assumed to take effect.

For any given efficiency level, DOE measures the change in LCC relative to an estimate of the no-new-standards case product efficiency distribution. The no-new-standards case estimate reflects the market in the absence of amended energy conservation standards, including the market for products that exceeds the current energy conservation standard. In contrast, the PBP is measured relative to the baseline product.

Inputs to the calculation of total installed cost include the cost of the product—which includes MSPs, distribution channel markups, and sales taxes—and installation costs. Inputs to the calculation of operating expenses include annual energy and water consumption, energy prices and price projections, combined water prices (which include water and wastewater prices) and price projections, repair and maintenance costs, product lifetimes, discount rates. DOE created distributions of values for product lifetime, discount rates, energy and combined water prices, and sales taxes, with probabilities attached to each value to account for their uncertainty and variability.

The computer model DOE used to calculate the LCC and PBP, which incorporates Crystal Ball™ (a commercially available software program), relies on a Monte Carlo simulation to incorporate uncertainty and variability into the analysis. The Monte Carlo simulations randomly sample input values from the probability distributions and CPSV user samples. The model calculated the LCC and PBP for products at each efficiency level for 10,000 CPSV users per simulation run.

DOE calculated the LCC and PBP for all consumers as if each were to purchase a new commercial prerinse spray valve in the first year of the analysis period. For this rulemaking, DOE anticipates any amended standards would apply to commercial prerinse spray valves manufactured 3 years after the date on which any final amended standard is published. For this rulemaking, DOE anticipates publication of any final standards in late 2015 and compliance in late 2018. However, for the purposes of this analysis, DOE used 2019 instead of 2018 as the beginning of the analysis period for the LCC and PBP analysis, due to the anticipated compliance date being late in the year 2018.

Table IV.2 summarizes the approach and data DOE used to derive inputs to the LCC and PBP calculations. The subsections that follow provide further discussion. Details of the spreadsheet model, and of all the inputs to the LCC and PBP analyses, are contained in chapter 8 and its appendices of the NOPR TSD.

TABLE IV.2—SUMMARY OF INPUTS AND METHODS FOR THE LCC AND PBP ANALYSIS *

Inputs	Source/method
Product Cost	Derived by multiplying MSPs by distribution channel markups and sales tax, as appropriate.
Installation Costs	Baseline installation cost determined with data from U.S. Department of Labor. Assumed no change with efficiency level.
Annual Energy and Water Use	Determined from the energy required to heat a gallon of water used at the prerinse spray valve multiplied by the average annual operating time and flow rate of each product class. Variability: By census region

[33] EPA WaterSense, *Prerinse Spray Valves Field Study Report,* (March 2011) (Available at: *www.epa.gov/watersense/docs/final_epa_prsv_study_report_033111v2_508.pdf.*).

TABLE IV.2—SUMMARY OF INPUTS AND METHODS FOR THE LCC AND PBP ANALYSIS *—Continued

Inputs	Source/method
Energy, Water and Wastewater Prices	Energy: Based on EIA's Form 826 data for 2013. Variability: By State Water: Based on 2012 AWWA Survey. Variability: By State
Energy and Water Price Trends	Energy: Forecasted using *AEO2014* price forecasts. Water: Forecasted using BLS historic water price index information.
Maintenance and Repair Costs	Assumed no change with efficiency level.
Product Lifetime	DOE assumed an average lifetime of 5 years. Variability: Characterized using modified Weibull probability distributions.
Discount Rates	Estimated using the average cost of capital to commercial prerinse spray valve consumers. Cost of capital was found using information from the federal reserve and from Damodaran online data.
First Year of Analysis Period	2019

* References for the data sources mentioned in this table are provided in the sections following the table or in chapter 8 of the NOPR TSD.

1. Product Cost

To calculate consumer product costs, DOE multiplied the MSPs developed in the engineering analysis by the distribution channel markups described in section IV.D (along with sales taxes). As stated earlier in this notice, DOE used baseline markups, but did not apply incremental markups, because the engineering analysis indicated that there is no price increase with improvements in efficiency for commercial prerinse spray valves. Product costs are assumed to remain constant over the analysis period.

2. Installation Cost

Installation cost includes labor, overhead, and any miscellaneous materials and parts needed to install the product. DOE received the following comments to the 2014 Framework document regarding installation costs of commercial prerinse spray valves.

T&S Brass commented that installation costs typically did not increase with higher-efficiency prerinse spray valves due to this process being a simple swap out. Under certain circumstances, depending on the manufacturer, additional materials may be necessary. (T&S Brass, Public Meeting Transcript, No. 6 at pp. 83–85) T&S Brass also commented that depending upon the manufacturer, dealer, or installer, the initial installation costs of new products may or may not change for higher-efficiency models. The valve is typically a pre-assembled component of a prerinse unit installed into new facilities, but is usually provided separately for pre-existing installations. For retrofit applications where an existing valve is replaced with a higher-efficiency valve, the cost may increase depending upon the degree of design change required to manufacture the commercial valve to the higher-efficiency requirement. This may require additional components, or revised upstream components, that are needed for proper installation and/or performance. This again is dependent upon the various manufacturers, dealers, or installers. (T&S Brass, No. 12 at p. 7)

DOE has not received any specific data or other comments regarding installation cost as a function of product efficiency. Given the relatively simple nature of installing spray valves, and because there are no substantial differences in size, shape, or function of more efficient units relative to baseline efficiency units, DOE assumes that installation costs for more efficient units are the same as the costs for baseline products.

3. Annual Energy and Water Consumption

Chapter 7 of the NOPR TSD details DOE's analysis of CPSV annual energy and water use at various efficiency levels. For each sampled building type, DOE determined the energy and water consumption for a commercial prerinse spray valve at different efficiency levels using the approach described in section IV.E of this notice.

4. Energy Prices

DOE derived energy prices from the EIA regional average energy price data for the commercial sectors. DOE used projections of these energy prices for commercial consumers to estimate future energy prices in the LCC and PBP analysis. EIA's *Annual Energy Outlook* (*AEO2014*) was used as the default source of projections for future energy prices.

DOE developed estimates of commercial electricity and natural gas prices for each state and the District of Columbia (DC). DOE derived average regional energy prices from data that are published annually based on EIA Form 826. DOE then used EIA's *AEO2014* price projections to estimate commercial electricity and natural gas prices in future years. EIA's *AEO2014* price projections have an end year of 2040. To estimate price trends after 2040, DOE used the average annual rate of change in prices from 2030 to 2040. DOE assumed that 100 percent of installations were in commercial locations. DOE did not receive any comments to the 2014 Framework document regarding its method for determining energy prices.

5. Water and Wastewater Prices

In the 2014 Framework document, DOE indicated that it would determine marginal water and wastewater rates in the U.S. that would be used in the LCC and PBP analysis, as well as the NIA. It further stated that it would investigate American Water Works Association's (AWWA's) biannual water and wastewater rate survey when modeling water and wastewater marginal pricing and projected future rate escalations. DOE received the following comments regarding the determination of the appropriate water prices for applicable analyses.

T&S Brass recommended using AWWA as a source for water prices. (T&S Brass, Public Meeting Transcript, No. 6 at p. 88) T&S Brass also commented that it recognized the relationship between wastewater discharge and water usage. The impact of wastewater discharge is dependent upon municipal wastewater charges, such as sewer rate. Therefore, similar to the costs of municipal water, wastewater charges are based upon the location across the nation. (T&S Brass, No. 12 at p. 7) T&S Brass suggested that DOE should contact AWWA to determine marginal water and wastewater rates and methods to break out water and wastewater rates across different pricing segments, such as regionally or by state, as well as future trends in water and wastewater rate escalations. (T&S Brass, Public Meeting Transcript, No. 6 at pp. 94–96)

In response to T&S Brass's comments, and consistent with the 2014 Framework document, DOE obtained data on water and wastewater prices from the 2012 AWWA surveys for this notice. For each state and DC, DOE combined all individual utility observations within the state to develop one value for water and wastewater service. Because water and wastewater charges are frequently tied to the same metered commodity values, DOE combined the prices for water and wastewater into one total dollar per thousand gallons figure. This figure is referred to as the combined water price. DOE used the consumer price index (CPI) data for water related consumption (1970–2013) in developing a real growth rate for combined water price forecasts.

Chapter 8 of the NOPR TSD provides more detail about DOE's approach to developing water and wastewater prices.

6. Maintenance and Repair Costs

Repair costs are associated with repairing or replacing components that have failed in the product; maintenance costs are associated with maintaining the operation of the product. Typically, small incremental increases in product efficiency produce no changes, or only minor changes, in repair and maintenance costs compared to baseline efficiency product.

In the 2014 Framework document, DOE requested information as to whether maintenance and repair costs are a function of efficiency level and product class. T&S Brass commented that determining whether repair costs may change for more efficient products, or whether commercial prerinse spray valves were typically replaced upon failure or repaired, depends on how the manufacturer markets their products. Some manufacturers and distributors place a premium on their more efficient products. Others view it as doing a service to the environment and to consumers by offering the same price. (T&S Brass, Public Meeting Transcript, No. 6 at pp. 94–96). T&S Brass also commented that some manufacturers offer repair kits. Some manufacturers view commercial prerinse spray valves as ''throwaway'' items, but T&S Brass does not, and stated that it could document that some of its original spray valves had been in use for over 60 years. (T&S Brass, Public Meeting Transcript, No. 6 at p. 86) Additionally T&S Brass commented that although its products can last longer than 5 years, end users decide whether to replace the entire unit or repair the unit in the field. (T&S Brass, Public Meeting Transcript, No. 6 at pp. 96–97) T&S Brass also stated that it offers an array of repair kits for commercial prerinse spray valves. (T&S Brass, No. 12 at pp. 7–8)

DOE acknowledges T&S Brass's comments. But, based on the lack of data regarding repair rates in the industry, DOE assumed that consumers would replace the commercial prerinse spray valve upon failure rather than repairing the product. DOE assumed that there are no changes in maintenance or repair costs between different efficiency levels.

7. Product Lifetime

Because product lifetime varies depending on utilization and other factors, DOE developed a distribution of product lifetimes. In the 2014 Framework document, DOE assumed an average CPSV lifetime of 5 years.

T&S Brass commented that water temperature and pressure, as well as frequency and duration of usage, were key considerations when determining the life expectancy of a unit. (T&S Brass, No. 12 at p. 3) T&S Brass also commented that they do not know of a correlation between spray valve usage and life expectancy. (T&S Brass, No. 12 at p. 3) T&S Brass pointed out that life-cycle testing for mechanical endurance is a prerequisite for third-party certification of commercial prerinse spray valves. (T&S Brass, No. 12 at p. 3)

DOE did not find sufficient data to support the use of factors such as usage, or water temperature and pressure, as a way to determine the distribution of lifetimes of commercial prerinse spray valves in the analysis for this notice.

T&S Brass commented that lifetime values cannot be accurately quantified because of the range and number of variables, as well as the various end-user applications that must be considered. (T&S, No. 12 at p. 3)

DOE developed a Weibull distribution with an average lifetime of 5 years and a maximum lifetime of 10 years. The use of a lifetime distribution for this analysis helps account for the variability of product lifetimes.

However, NEEA commented that it expected the actual lifetime to be reduced due to an observed 10 percent attrition after 1 year because of events such as businesses closing, the unit being replaced, or rinsing stations being removed in Northwest utility programs. Additionally, NEEA pointed out that SBW Consulting's evaluation report estimated that CPSV lifetimes might be as low as 2 years based on reported sales volume and the estimated population of commercial prerinse spray valves. (NEEA, No. 13 at pp. 1–2)

In consideration of NEEA's comment regarding the lifetime distributions used for commercial prerinse spray valves, in the NOPR analysis DOE modified the Weibull distribution to reflect 10 percent of commercial prerinse spray valves failing within the first year after installation. See chapter 8 of the NOPR TSD for further details on the method and sources DOE used to develop CPSV lifetimes.

8. Discount Rates

In the calculation of LCC, DOE developed discount rates by estimating the average cost of capital to commercial prerinse spray valve consumers. DOE applies discount rates to commercial consumers to estimate the present value of future cash flows derived from a project or investment. Most companies use both debt and equity capital to fund investments, so the cost of capital is the weighted-average cost to the firm of equity and debt financing. See chapter 8 in the NOPR TSD for further details on the development of consumer discount rates.

9. No-New-Standards Case Efficiency Distribution

To accurately estimate the share of consumers that would be affected by a potential energy conservation standard at a particular efficiency level, DOE's LCC and PBP analysis considered the projected distribution of product efficiencies that consumers purchase under the no-new-standards case. DOE refers to this distribution of product efficiencies as a no-new-standards case efficiency distribution.

To estimate the no-new-standards case efficiency distribution of commercial prerinse spray valves in 2019 (the first year of the analysis period), DOE relied on data from the Food Service Technology Center and DOE's CCMS Database for commercial prerinse spray valves.[34] Additionally, DOE conducted general internet searches and examined manufacturer literature to understand the characteristics of the spray valves currently offered on the market. DOE assumed that the no-standards case percentages in 2019 would stay the same through the analysis period. The no-standards case efficiency distribution is described in chapter 8 of the NOPR TSD.

The estimated shares for the no-standards case efficiency distribution

[34] The Food Service Technology Center test data for prerinse spray valves is available at *www.fishnick.com/equipment/sprayvalves/*. The DOE compliance certification data for commercial prerinse spray valves is available at *www.regulations.doe.gov/certification-data/*.

for commercial prerinse spray valves are shown in Table IV.3.

TABLE IV.3—COMMERCIAL PRERINSE SPRAY VALVE NO-STANDARDS CASE EFFICIENCY DISTRIBUTION BY PRODUCT CLASS IN 2019

Efficiency level	Light duty (% of shipments)	Standard duty (% of shipments)	Heavy duty (% of shipments)
Baseline	15	40	40
1	35	50	50
2	0	0	5
3	50	10	5

10. Payback Period Analysis

The payback period is the amount of time it takes the consumer to recover the additional installed cost of more efficient products, compared to baseline product, through energy and water cost savings. Payback periods are expressed in years. Payback periods that exceed the life of the product mean that the increased total installed cost is not completely recovered in reduced operating expenses.

The inputs to the PBP calculation for each efficiency level are the change in total installed cost of the product and the change in the first-year annual operating expenditures relative to the baseline. The PBP calculation uses the same inputs as the LCC analysis, except that discount rates are not needed. As explained in the engineering analysis of this notice (IV.C) there are no additional installed costs for more efficient commercial prerinse spray valves, making the PBP zero.

11. Rebuttable-Presumption Payback Period

EPCA, as amended, establishes a rebuttable presumption that a standard is economically justified if DOE finds that the additional cost to the consumer of purchasing a product complying with an energy conservation standard level will be less than three times the value of the first year's energy (and, as applicable, water) savings resulting from the standard, as calculated under the test procedure in place for that standard. (42 U.S.C. 6295(o)(2)(B)(iii)) For each considered efficiency level, DOE determined the value of the first year's energy and water savings by calculating the quantity of those savings in accordance with the applicable DOE test procedure, and multiplying that amount by the average energy and combined water price forecast for the year in which compliance with the amended standard would be required. The results are summarized in section V.B.1.c of this notice.

G. Shipments

DOE uses projections of product shipments to calculate the national impacts of potential amended energy conservation standards on energy and water use, NPV, and future manufacturer cash flows. DOE develops shipment projections based on historic economic figures and an analysis of key market drivers for commercial prerinse spray valves. In DOE's shipments model, CPSV shipments are driven by both new construction and stock replacements. The shipments model takes an accounting approach, tracking market shares of each product class and the vintage of units in the existing stock. Stock accounting uses product shipments as inputs to estimate the age distribution of in-service product stocks for all years. The age distribution in-service product is a key input to calculations of both the national energy savings (NES), national water savings, and NPV, because operating costs for any year depend on the age distribution of the stock. DOE also considers the impacts on shipments from changes in product purchase price and operating cost associated with higher efficiency levels.

In the 2014 Framework document, DOE stated its intention to use historical shipment data for commercial prerinse spray valves obtained from trade organization surveys and commercial floor space growth data to characterize CPSV shipments. In response, NEEA recommended including a broader mix of building types beyond just restaurants, such as grocery stores and institutional facilities, to estimate total shipments. (NEEA, No. 13 at p. 1)

In the shipments analysis for this notice, DOE gathered information pertaining to commercial prerinse spray valves for many building types besides just restaurants from the National Restaurant Association, Puget Sound Energy Program, EPA WaterSense Field Study, and other industry reports.

DOE did not receive any shipments data from interested parties in response to the 2014 Framework document. DOE based the retirement function (the time at which the product fails and is replaced) on the probability distribution for product lifetime that was developed in the LCC and PBP analysis. The shipments model assumes that no units are retired below a minimum product lifetime (one year of service) and that all units are retired before exceeding a maximum product lifetime (ten years of service).

In the 2014 Framework document, DOE indicated that it intended to derive standards case shipments projections using the same data used in the development of the base case projections. DOE assumed that any potential amended energy conservation standards for commercial prerinse spray valves would not impact the total volume of shipments over the analysis period. Rather, in response to the proposed standards, product shipments may move from one efficiency level to another, but the total number of units shipped remains the same between the base and standards cases.

DOE determined that a roll-up scenario is most appropriate to establish the distribution of efficiencies for the year that compliance with amended CPSV standards would be required. Under the ''roll-up'' scenario, DOE assumes: (1) Product efficiencies in the no-standards case that do not meet the standard level under consideration would ''roll-up'' to meet the new standard level; and (2) product efficiencies above the standard level under consideration would not be affected. The details of DOE's approach to forecast efficiency trends are described in chapter 8 of the NOPR TSD.

The nature of the market for commercial prerinse spray valves makes it possible that consumers may, under examined TSLs and product classes, opt to switch product classes to a commercial prerinse spray valve that consumes more water and energy than their current product. In particular, if current choices of product correspond to consumers' optimal product under the current regulatory environment, it is probable that some consumers would switch from the standard-duty product class to the heavy-duty product class in response to proposed standards, given the lack of restrictions on doing so. DOE implemented a mechanism in the shipments model to estimate such consumer choices. The economics resulting from product-class switching may result in lower optimal efficiency levels and reduced estimates of water and energy savings, as compared to the case without class switching. A detailed description of DOE's method to model product-class switching is contained in chapter 9 of the NOPR TSD.

H. National Impact Analysis

The NIA assesses the NES, national water savings, and NPV of total consumer costs and savings that would be expected to result from amended standards at specific efficiency levels. DOE calculates the NES, national water savings, and NPV based on projections of annual CPSV shipments, along with the annual energy and water consumption and total installed cost data from the energy and water use analysis, as well as the LCC and PBP analysis. DOE forecasted the energy and water savings, operating cost savings, product costs, and NPV of consumer benefits over the lifetime of products sold from 2019 through 2048.

DOE evaluates the impacts of new and amended standards by comparing a base-case projection with standards-case projections. The base-case projection characterizes energy and water use and consumer costs for each product class in the absence of new or amended energy conservation standards. For the base-case projection, DOE considers historical trends in efficiency and various forces that are likely to affect the mix of efficiencies over time. DOE compares the base-case projection with projections characterizing the market for each product class if DOE adopted new or amended standards at specific energy efficiency levels (*i.e.,* the TSLs or standards cases) for that class. For the standards cases, DOE considers how a given standard would likely affect the market shares of products with efficiencies greater than the standard.

DOE uses a spreadsheet model to calculate the energy and water savings, and the national consumer costs and savings for each TSL. Chapter 10 of the NOPR TSD describes the models and how to use them; interested parties can review DOE's analyses by changing various input quantities within the spreadsheet. The NIA spreadsheet model uses typical or weighted-average mean values (as opposed to probability distributions) as inputs.

DOE used projections of energy and combined water prices as described in section IV.F.4 and IV.F.5, as well as chapter 8 of the NOPR TSD. As part of the NIA, DOE analyzed scenarios that used inputs from the *AEO2014* Low Economic Growth and High Economic Growth cases. Those cases have higher and lower energy price trends compared to the reference case. NIA results based on these cases are presented in appendix 10A of the NOPR TSD.

Table IV.4 summarizes the inputs and methods DOE used for the NIA analysis. Discussion of these inputs and methods follows the table. See chapter 10 of the NOPR TSD for further details.

TABLE IV.4—SUMMARY OF INPUTS AND METHODS FOR THE NATIONAL IMPACT ANALYSIS

Inputs	Method
Shipments	Annual shipments from shipments model.
First Year of Analysis Period	2019
No-Standards Case Forecasted Efficiencies.	Efficiency distributions are forecasted based on historical efficiency data.
Standards Case Forecasted Efficiencies	Used a "roll-up" scenario.
Annual Energy and Water Consumption per Unit.	Annual weighted-average values are a function of energy and water use at each TSL.
Total Installed Cost per Unit	Annual weighted-average values are a function of cost at each TSL. Incorporates forecast of future product prices based on historical data.
Annual Energy and Combined Water Cost per Unit.	Annual weighted-average values as a function of the annual energy and water consumption per unit, and energy, and combined water treatment prices.
Energy Prices	*AEO2014* forecasts (to 2040) and extrapolation through 2058.
Energy Site-to-Source Conversion Factors	Varies yearly and is generated by NEMS–BT.
Discount Rate	3 and 7 percent real.
Present Year	Future expenses discounted to 2015, when the NOPR will be published.

1. National Energy and Water Savings

The national energy and water savings analysis involves a comparison of national energy and water consumption of the considered product in each potential standards case (TSL) with consumption in the no-standards case with no amended energy and water conservation standards. DOE calculated the national energy and water consumption by multiplying the number of units (stock) of each product unit (by vintage or age) by the unit energy and water consumption (also by vintage). Then, DOE calculated annual NES and national water savings based on the difference in national energy and water consumption for the no-standards case (without amended efficiency standards) and for each higher efficiency standard. DOE estimated energy consumption and savings based on site energy, and converted the electricity consumption and savings to primary energy using annual conversion factors derived from the *AEO2014* version of NEMS. Cumulative energy and water savings are the sum of the annual NES and national water savings for each year over the timeframe of the analysis. DOE has historically presented NES in terms of primary energy savings. In the case of electricity use and savings, this quantity includes the energy consumed by power plants to generate delivered (site) electricity.

In response to the recommendations of a committee on ''Point-of-Use and Full-Fuel-Cycle Measurement Approaches to Energy Efficiency Standards'' appointed by the National Academy of Sciences, DOE announced its intention to use FFC measures of energy use and greenhouse gas and other emissions in the national impact analyses and emissions analyses included in future energy conservation standards rulemakings. 76 FR 51281 (Aug. 18, 2011). After evaluating the approaches discussed in the August 18, 2011 proposed statement of policy, DOE published a statement of amended policy in the **Federal Register** in which DOE explained its determination that NEMS is the most appropriate tool for its FFC analysis, as well as its intention to use NEMS for that purpose. 77 FR 49701 (Aug. 17, 2012).

2. Forecasted Efficiency in the No-Standards Case and Standards Cases

A key component of the NIA is the trend in energy efficiency projected for the no-standards case (without new or amended standards) and the standards case. Section IV.F.9 of this notice describes how DOE developed a no-standards case energy efficiency distribution (which yields a shipment-weighted average efficiency) for each of the considered product classes for the first year of the forecast period.

3. Net Present Value Analysis

The inputs for determining the NPV of the total costs and benefits experienced by consumers are: (1) Total annual installed cost, (2) total annual savings in operating costs, and (3) a discount factor to calculate the present value of costs and savings. DOE calculates net savings each year as the difference between the no-standards case and each standards case in terms of total savings in operating costs versus total increases in installed costs. DOE calculates operating cost savings over the lifetime of each product unit shipped during the forecast period. The operating cost savings are energy and combined water cost savings.

In calculating the NPV, DOE multiplies the net savings in future years by a discount factor to determine their present value. DOE estimated the NPV of consumer benefits using both a 3-percent and a 7-percent real discount rate. DOE uses these discount rates in accordance with guidance provided by the Office of Management and Budget (OMB) to Federal agencies on the development of regulatory analysis.[35] The discount rates for the determination of NPV are in contrast to the discount rates used in the LCC and PBP analysis, which are designed to reflect an individual consumer's perspective. The 7-percent real value is an estimate of the average before-tax rate of return to private capital in the U.S. economy. The 3-percent real value represents the ''social rate of time preference,'' which is the rate at which society discounts future consumption flows to their present value.

I. Consumer Subgroup Analysis

In analyzing the potential impact of new or amended standards on consumers, DOE evaluates the impact on identifiable subgroups of consumers that may be disproportionately affected by an amended national standard. DOE evaluated impacts on particular subgroups of consumers by analyzing the LCC impacts and PBP for those particular consumers from alternative standard levels. For this rulemaking, DOE analyzed the impacts of the considered standard levels on single entities and limited service establishment end users.

In general, the higher the cost of capital and the lower the cost of energy and water, the more likely it is that an entity would be disproportionately affected by the requirement to purchase higher efficiency product. In this analysis, a single entity would be a small, independent, or family-owned business that operates in a single location. Compared to large corporations and franchises, these single entities might be subjected to higher costs of capital. For the purpose of the subgroup analysis, a limited service establishment is a consumer that is likely to have a significantly lower operating time than the average consumer. A lower operating time would lead to lower operating cost savings over the lifetime of the product, making this subgroup of consumers disproportionately affected by amended efficiency standards. Chapter 11 in the NOPR TSD describes the consumer subgroup analysis in greater detail.

J. Manufacturer Impact Analysis

1. Overview

DOE performed an MIA to estimate the financial impacts of amended energy conservation standards on manufacturers of commercial prerinse spray valves and to estimate the potential impacts of such standards on employment and manufacturing capacity. The MIA has both quantitative and qualitative aspects and includes analyses of forecasted industry cash flows, the INPV, investments in research and development (R&D) and manufacturing capital, and domestic manufacturing employment. Additionally, the MIA seeks to determine how amended energy conservation standards might affect manufacturing employment, capacity, and competition, as well as how standards contribute to overall regulatory burden. Finally, the MIA serves to identify any disproportionate impacts on manufacturer subgroups, including small business manufacturers.

The quantitative elements of the MIA rely on the Government Regulatory Impact Model (GRIM), an industry cash-flow model customized for this rulemaking. See section IV.J.2 for details on the GRIM. The qualitative parts of the MIA address factors such as product characteristics, characteristics of particular firms, and market trends. The complete MIA is discussed in chapter 12 of the NOPR TSD. DOE conducted the MIA in the three phases.

In Phase 1 of the MIA, DOE prepared a profile of the commercial prerinse spray valve manufacturing industry based on the market and technology assessment, information on the present and past market structure and characteristics of the industry, product attributes, product shipments, manufacturer markups, and the cost structure for various manufacturers.

The profile also included an analysis of manufacturers in the industry using Security and Exchange Commission 10–K filings, Standard & Poor's stock reports, and corporate annual reports released by publicly held companies.[36] DOE used this and other publicly available information to derive preliminary financial inputs for the GRIM, including an industry discount rate, manufacturer markup, cost of goods sold and depreciation, selling, general, and administrative (SG&A) expenses, and research and development (R&D) expenses.

Phase 2 focused on the financial impacts of potential amended energy conservation standards on the industry as a whole. Amended energy conservation standards can affect manufacturer cash flows in three distinct ways: (1) Create a need for increased investment, (2) raise per-unit production costs, and (3) alter manufacturer revenue due to possible changes in sales volumes and/or manufacturer's per-unit gross margins. DOE used the GRIM to model these effects in a cash-flow analysis of the commercial prerinse spray valve manufacturing industry. In performing this analysis, DOE used the financial parameters developed in Phase 1, the cost-efficiency curves from the engineering analysis, and the shipment assumptions from the NIA.

In phase 3, DOE evaluated subgroups of manufacturers that may be disproportionately impacted by standards or that may not be accurately represented by the average cost assumptions used to develop the industry cash-flow analysis. For example, small businesses, manufacturers of niche products, or companies exhibiting a cost structure that differs significantly from the

[35] OMB Circular A–4, section E (Sept. 17, 2003) (Available at: *www.whitehouse.gov/omb/memoranda/m03–21.html*.).

[36] SEC Form 10–K filings are available at *www.sec.gov/edgar.shtml*. Stock reports are available at *www.standardandpoors.com*.

industry average could be more negatively affected. While DOE did not identify any other subgroup of manufacturers of commercial prerinse spray valves that would warrant a separate analysis, DOE specifically investigated impacts on small business manufacturers. See section V.B.2.d and section VI.B of this notice for more information.

The MIA also addresses the direct impact on employment tied to the manufacturing of commercial prerinse spray valves. Using the GRIM and census data, DOE estimated the domestic labor expenditures and number of domestic production workers in the no-standards case and at each TSL from 2015 to 2048. See section V.B.2.b of this notice and chapter 12 of the NOPR TSD for more information on direct employment impacts.

2. Government Regulatory Impact Model

DOE uses the GRIM to quantify the changes in cash flow that result in a higher or lower industry value due to energy conservation standards. The GRIM is a standard, discounted cash-flow model that incorporates manufacturer costs, markups, shipments, and industry financial information as inputs, and models changes in manufacturing costs, shipments, investments, and margins that may result from amended energy conservation standards. The GRIM uses these inputs to arrive at a series of annual cash flows, beginning with the base year of the analysis, 2015, and continuing to 2048. DOE uses the industry-average weighted average cost of capital (WACC) of 6.9 percent, as this represents the minimum rate of return necessary to cover the debt and equity obligations manufacturers use to finance operations.

DOE used the GRIM to compare INPV in the no-standards case with INPV at each TSL (the standards case). The difference in INPV between the base and standards cases represents the financial impact of the amended standard on manufacturers. Additional details about the GRIM can be found in chapter 12 of the NOPR TSD.

a. GRIM Key Inputs

Manufacturer Production Costs

Manufacturer production costs are the costs to the manufacturer to produce a commercial prerinse spray valve. These costs include materials, labor, overhead, and depreciation. Changes in the MPCs of commercial prerinse spray valves can affect revenues, gross margins, and cash flow of the industry, making product cost data key inputs for DOE's analysis. DOE estimated the MPCs for the three commercial prerinse spray valve product classes at the baseline and higher efficiency levels, as described in section IV.C of this notice. The cost model also disaggregated the MPCs into the cost of materials, labor, overhead, and depreciation. DOE used the MPCs and cost breakdowns as described in section IV.C of this notice, and further detailed in chapter 5 of the NOPR TSD, for each efficiency level analyzed in the GRIM.

No-Standards Case Shipments Forecast

The GRIM estimates manufacturer revenues in each year of the forecast based in part on total unit shipments and the distribution of these values by efficiency level and product class. Generally, changes in the efficiency mix and total shipments at each standard level affect manufacturer finances. The GRIM uses the NIA shipments forecasts from 2015 to 2048, the end of the analysis period.

To calculate shipments, DOE developed a shipments model for each product class based on an analysis of key market drivers for commercial prerinse spray valves. For greater detail on the shipments analysis, see section IV.G of this notice and chapter 9 of the NOPR TSD.

Product and Capital Conversion Costs

Amended energy conservation standards may cause manufacturers to incur conversion costs to make necessary changes to their production facilities and bring product designs into compliance. For the MIA, DOE classified these costs into two major groups: (1) Product conversion costs and (2) capital conversion costs. Product conversion costs are investments in R&D, testing, marketing, and other non-capitalized costs focused on making product designs comply with the amended energy conservation standard. Capital conversion costs are investments in property, plant, and equipment to adapt or change existing production facilities so that new product designs can be fabricated and assembled.

DOE contacted manufacturers of commercial prerinse spray valves for the purpose of conducting interviews. However, no manufacturer agreed to participate in an interview. In the absence of information from manufacturers, DOE created estimates of capital and product conversion costs using the engineering cost model and information gained during product teardowns. DOE's estimates of the product and capital conversion costs for the CPSV manufacturing industry can be found in section IV.J.2 of this notice and in chapter 12 of the NOPR TSD. DOE seeks information on capital and product conversion costs associated with amended standards for commercial prerinse spray valves.

b. GRIM Scenarios

Standards Case Shipments Forecasts

The MIA results presented in section V.B.2 of this notice use shipments from the NIA. For standards case shipments, DOE assumed that commercial prerinse spray valve consumers would choose to buy the commercial prerinse spray valve that has the flow rate that is closest to the flow rate of the product they currently use and that complies with the new standard (and, accordingly, manufacturers would choose to produce products with the closest flow rate to those they currently produce). Due to the structure of the product classes and efficiency levels for this rule, in certain instances, product class switching is predicted to occur, wherein consumers choose to buy the product with the flow rate that is closest to their current product's flow rate even if it has a higher spray force (putting those products into a different product class). Where product class switching does not occur, no-standards case shipments of products that did not meet the new standard would roll up to meet the standard starting in the compliance year. See section IV.G of this notice for a description of the standards case efficiency distributions.

The NIA also used historical data to derive a price scaling index to forecast product costs. The MPCs and MSPs in the GRIM use the default price forecast for all scenarios, which assumes constant pricing. See section IV.F.1 of this notice for a discussion of DOE's price forecasting methodology.

Markup Scenarios

MSP is equal to MPC times a manufacturer markup. The MSP includes direct manufacturing production costs (*i.e.,* labor, material, depreciation, and overhead estimated in DOE's MPCs) and all non-production costs (*i.e.,* SG&A, R&D, and interest), along with profit.

DOE used the baseline manufacturer markup of 1.30, developed during Phase 1 and subsequently revised, for all products when modeling the no-standards case in the GRIM. DOE requests comment on the use of 1.30 as an appropriate baseline markup for all commercial prerinse spray valves.

For the standards case in the GRIM, DOE modeled two markup scenarios to represent the uncertainty regarding the potential impacts on prices and profitability for manufacturers following the implementation of amended energy conservation standards. For both GRIM markup scenarios, DOE placed no premium on higher efficiency products. This is based on the assumption that efficiency is not the primary factor influencing purchasing decisions for commercial prerinse spray valve consumers. The two standards case markup scenarios are (1) a preservation of gross margin as a percentage of revenues markup scenario, and (2) a preservation of per-unit earnings before interest and taxes (EBIT) markup scenario.

The preservation of gross margin as a percentage of revenues markup scenario assumes that the baseline markup of 1.30 is maintained for all products in the standards case. Typically, this scenario represents the upper bound of industry profitability, as manufacturers are able to fully pass through additional costs due to amended standards to their consumers under this scenario.

The preservation of per-unit EBIT markup scenario is similar to the preservation of gross margin as a percentage of revenues markup scenario, with the exception that in the standards case minimally compliant products lose a fraction of the baseline markup. Typically, this scenario represents the lower bound for profitability and a more substantial impact on the industry as manufacturers accept a lower margin in an attempt to offer price competitive entry level products while maintaining the same level of EBIT, on a per-unit basis, that they saw prior to amended standards.

For the commercial prerinse spray valve industry, there is no difference between the preservation of gross margin as a percentage of revenues and the preservation of per-unit EBIT markup scenarios described previously. This is explained by the fact that manufacturing production costs are estimated to be constant across all standard efficiency levels (*i.e.,* baseline, EL 1, EL 2, EL 3), total shipments are constant across standards efficiency levels, and changes in standard case shipments for certain product classes as a result of product class switching (*e.g.,* a decrease in Standard Duty commercial prerinse spray valve shipments and an equivalent increase in Heavy Duty commercial prerinse spray valve shipments at all TSLs) are controlled for by using the per-unit EBIT in modeling the lower bound of industry profitability. Because the preservation of gross margin as a percentage of revenues and the preservation of per-unit EBIT markup scenarios produce the same results in the GRIM, DOE does not break out the results of each in the presentation of INPV impacts in section V.B.2.a of this notice. DOE requests comment on the appropriateness of assuming a constant manufacturer markup across all product classes and efficiency levels.

Capital Conversion Cost Scenarios

In order to estimate an upper and lower bound of industry profitability as a result of amended energy conservation standards for commercial prerinse spray valves, DOE developed two model scenarios for the capital conversion costs required to meet each TSL. The assumption underlying both scenarios is that capital conversion costs associated with increasing the efficiency of commercial prerinse spray valves are exclusively related to the fabrication of plastic nozzles, as manufacturers would have to redesign nozzle molds to produce a nozzle with fewer or smaller spray holes. DOE does not believe there would be capital conversion costs associated with the in-house fabrication of metal nozzles. A more detailed discussion of capital conversion cost assumptions is provided in chapter 12 of the NOPR TSD.

One capital conversion cost scenario, representing the upper bound of industry profitability, assumes that the majority of commercial prerinse spray valve manufacturers source components (including the nozzle) from component suppliers and simply assemble the commercial prerinse spray valves (*i.e.,* Sourced Components Scenario). The second scenario, representing the lower bound of industry profitability, assumes that all of the commercial prerinse spray valve manufacturers currently selling products with plastic spray nozzles fabricate these nozzles in-house (*i.e.,* Fabricated Components Scenario). More detail regarding these capital conversion cost scenarios is provided in chapter 12 of the NOPR TSD. Additionally, DOE requests comment on which capital conversion cost scenario more accurately reflects the expected capital conversion costs associated with amended standards for commercial prerinse spray valves.

3. Discussion of Comments

During the public comment period following the 2014 Framework public meeting, trade associations and a small business manufacturer of commercial prerinse spray valves provided several comments on the potential impact of amended energy conservation standards on manufacturers.

PMI stated that manufacturers are required to comply with Federal, state, and local regulations, and often strive to obtain additional certifications under EPA's WaterSense program, IAPMO, and the Canadian Standards Association (CSA). PMI stated that commercial prerinse spray valve manufacturers are required to file their products with many agencies, including the Federal Trade Commission (FTC), DOE, CEC, the State of Texas, and the State of Massachusetts. Collectively, these requirements impose a worrisome burden on manufacturers in terms of time and cost. (PMI, No. 10 at p. 2) T&S Brass commented that manufacturers of commercial prerinse spray valves are familiar with industry standards such as ASME A112.18.1/CSA B125.1 and ASTM F2324–13, and that manufacturers recognize the added burden of re-testing and certification due to design and/or performance changes. (T&S, No. 12 at p. 6)

DOE acknowledges the existence of Federal regulations, cleanability standards established by the State of California,[37] and third-party certification programs impacting commercial prerinse spray valve manufacturers. DOE investigates cumulative regulatory burden impacts associated with this rulemaking in section V.B.2.e of this notice, and in more detail in chapter 12 of the NOPR TSD. Additionally, DOE requests comment on the recertification costs associated with complying with industry standards that result from amended DOE standards for commercial prerinse spray valves. DOE will consider any such additional information when estimating product conversion costs for the final rule (section VII.E. of this notice).

NAFEM commented that DOE failed to show how the considerable costs of the regulation are economically justified. NAFEM also suggested that the economic impact on manufacturers and consumers, particularly small businesses, is considerable because the technology options suggested by DOE in the Framework document are not technologically feasible. (NAFEM, No. 9 at p. 2) Both T&S Brass and NAFEM agreed that small businesses should be analyzed as a manufacturer subgroup in the manufacturer impact analysis. (T&S, Public Meeting Transcript, No. 6 at p. 65 and NAFEM, No. 9 at p. 2) Additionally, T&S Brass commented that small businesses operate on strict budgets and operating costs. (T&S, No. 12 at p. 8)

[37] Commercial pre-rinse spray valves manufactured on or after January 1, 2006, shall be capable of cleaning 60 plates in an average time of not more than 30 seconds per plate. (*http://www.energy.ca.gov/2014publications/CEC-400-2014-009/CEC-400-2014-009-CMF.pdf*)

The economic impact on manufacturers is presented in section V.B.2. The economic impact on consumers is presented in section V.B.1. DOE analyzes the impacts of the rulemaking on small business manufacturers as a subgroup in section VI.B of this notice, and in section 12.6 of the NOPR TSD.

T&S Brass suggested that DOE include importers of commercial prerinse spray valves as a subgroup because the lack of enforcement by government agencies on importers has adverse effects on other commercial prerinse spray valve manufacturers who do follow the current regulations. (T&S, No. 12 at p.8)

Energy conservation standards set by DOE apply to imported commercial prerinse spray valves as well as commercial prerinse spray valves assembled or manufactured domestically. Commercial prerinse spray valves are subject to DOE's enforcement authority for energy conservation standards, regardless of whether they are imported or manufactured domestically. For this reason, DOE does not believe that importers of commercial prerinse spray valves should be considered as a manufacturing subgroup for this analysis.

4. Manufacturer Interviews

DOE contacted manufacturers representing an estimated 100 percent of the U.S. commercial prerinse spray valve market for the purpose of conducting interviews. However, no manufacturer agreed to participate in an interview.

K. Emissions Analysis

In the emissions analysis, DOE estimated the reduction in power sector emissions of CO_2, NO_X, SO_2, and Hg from potential energy conservation standards for commercial prerinse spray valves. In addition to estimating impacts of standards on power sector emissions, DOE estimated emissions impacts in production activities (extracting, processing, and transporting fuels) that provide the energy inputs to power plants. These are referred to as ''upstream'' emissions. Together, these emissions account for the FFC. In accordance with DOE's FFC Statement of Policy (76 FR 51281 (Aug. 18, 2011) as amended at 77 FR 49701 (August 17, 2012)), the FFC analysis also includes impacts on emissions of methane (CH_4) and nitrous oxide (N_2O), both of which are recognized as greenhouse gases.

DOE conducted the emissions analysis using emissions factors for CO_2 and most of the other gases derived from data in *AEO2014.* Combustion emissions of CH_4 and N_2O were estimated using emissions intensity factors published by the EPA in its Greenhouse Gas (GHG) Emissions Factors Hub.[38] DOE developed separate emissions factors for power sector emissions and upstream emissions. The method that DOE used to derive emissions factors is described in chapter 13 of the NOPR TSD.

For CH_4 and N_2O, DOE calculated emissions reduction in tons and also in terms of units of carbon dioxide equivalent (CO_2eq). Gases are converted to CO_2eq by multiplying each ton of the greenhouse gas by the gas's global warming potential (GWP) over a 100-year time horizon. Based on the Fifth Assessment Report of the Intergovernmental Panel on Climate Change,[39] DOE used GWP values of 28 for CH_4 and 265 for N_2O.

EIA prepares the *AEO* using NEMS. Each annual version of NEMS incorporates the projected impacts of existing air quality regulations on emissions. *AEO2014* generally represents current legislation and environmental regulations, including recent government actions, for which implementing regulations were available as of October 31, 2013.

SO_2 emissions from affected electric generating units (EGUs) are subject to nationwide and regional emissions cap-and-trade programs. Title IV of the Clean Air Act sets an annual emissions cap on SO_2 for affected EGUs in the 48 contiguous States and DC. SO_2 emissions from 28 eastern States and DC were also limited under the Clean Air Interstate Rule (CAIR). 70 FR 25162 (May 12, 2005).

CAIR created an allowance-based trading program that operates along with the Title IV program. In 2008, CAIR was remanded to EPA by the U.S. Court of Appeals for the District of Columbia Circuit, but it remained in effect.[40] In 2011, EPA issued a replacement for CAIR, the Cross-State Air Pollution Rule (CSAPR). 76 FR 48208 (August 8, 2011). On August 21, 2012, the DC Circuit issued a decision to vacate CSAPR,[41] and the court ordered EPA to continue administering CAIR. On April 29, 2014, the U.S. Supreme Court reversed the judgment of the DC Circuit and remanded the case for further proceedings consistent with the Supreme Court's opinion.[42] On October 23, 2014, the DC Circuit lifted the stay of CSAPR.[43] Pursuant to this action, CSAPR went into effect (and CAIR ceased to be in effect) as of January 1, 2015.

Because *AEO2014* was prepared prior to the Supreme Court's opinion, it assumed that CAIR remains a binding regulation through 2040. Thus, DOE's analysis used emissions factors that assume that CAIR, not CSAPR, is the regulation in force. However, the difference between CAIR and CSAPR is not relevant for the purpose of DOE's analysis of emissions impacts from energy conservation standards.

The attainment of emissions caps is typically flexible among EGUs and is enforced through the use of emissions allowances and tradable permits. Beginning in 2016, however, SO_2 emissions will decline significantly as a result of the Mercury and Air Toxics Standards (MATS) for power plants. 77 FR 9304 (Feb. 16, 2012). In the final MATS rule, EPA established a standard for hydrogen chloride as a surrogate for acid gas hazardous air pollutants (HAP), and also established a standard for SO_2 (a non-HAP acid gas) as an alternative equivalent surrogate standard for acid gas HAP. The same controls are used to reduce HAP and non-HAP acid gas; thus, SO_2 emissions will be reduced as a result of the control technologies installed on coal-fired power plants to comply with the MATS requirements for acid gas. *AEO2014* assumes that, in order to continue operating, coal plants must have either flue gas desulfurization or dry sorbent injection systems installed by 2016. Both technologies, which are used to reduce acid gas emissions, also reduce SO_2 emissions. Under the MATS, emissions will be far below the cap established by CAIR, so it is unlikely that excess SO_2 emissions allowances resulting from the lower electricity demand would be

[38] See EPA emission factors for GHG inventories available at *www.epa.gov/climateleadership/inventory/ghg-emissions.html.*

[39] IPCC, *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)] Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. Chapter 8 (2013).

[40] See *North Carolina* v. *EPA,* 550 F.3d 1176 (D.C. Cir. 2008); *North Carolina* v. *EPA,* 531 F.3d 896 (D.C. Cir. 2008).

[41] See *EME Homer City Generation, LP* v. *EPA,* 696 F.3d 7, 38 (D.C. Cir. 2012), *cert. granted,* 81 U.S.L.W. 3567, 81 U.S.L.W. 3696, 81 U.S.L.W. 3702 (U.S. June 24, 2013) (No. 12–1182).

[42] *See EPA* v. *EME Homer City Generation,* 134 S.Ct. 1584, 1610 (U.S. 2014). The Supreme Court held in part that EPA's methodology for quantifying emissions that must be eliminated in certain States due to their impacts in other downwind States was based on a permissible, workable, and equitable interpretation of the Clean Air Act provision that provides statutory authority for CSAPR.

[43] *See Georgia* v. *EPA,* Order *(D.C. Cir. filed October 23, 2014)* (*No. 11–1302).*

needed or used to permit offsetting increases in SO_2 emissions by any regulated EGU. Therefore, DOE believes that energy efficiency standards will reduce SO_2 emissions in 2016 and beyond.

CAIR established a cap on NO_X emissions in 28 eastern States and DC.[44] Energy conservation standards are expected to have little effect on NO_X emissions in those States covered by CAIR because excess NO_X emissions allowances resulting from the lower electricity demand could be used to permit offsetting increases in NO_X emissions. However, standards would be expected to reduce NO_X emissions in the States not affected by the caps, so DOE estimated NO_X emissions reductions from the standards considered in this NOPR for these States.

The MATS limit mercury emissions from power plants, but they do not include emissions caps. DOE estimated mercury emissions using emissions factors based on *AEO2014,* which incorporates the MATS.

In the 2014 Framework document, DOE requested comment and information on potential methods and data sources that can be used to assess emissions reductions as a result of water savings. In response to DOE's request, the Advocates commented that the analysis should take into account the off-site energy embedded by public water suppliers, private wells, and wastewater treatment systems serving locations with covered products that use water. The Advocates further stated that they intend to develop a more substantial recommendation regarding methods and data sources for this docket at a later date. (Advocates, No. 11 at pp. 2–3) DOE recognizes that there are emission reductions related to reduction in water production and distribution. However, currently there are no standardized models or tools that adequately account for these reductions as a result of water savings, and DOE was not able to analyze these potential emissions reductions.

L. Monetizing Carbon Dioxide and Other Emissions Impacts

As part of the development of this proposed rule, DOE considered the estimated monetary benefits from the reduced emissions of CO_2 and NO_X that are expected to result from each of the TSLs considered. In order to make this calculation analogous to the calculation of the NPV of consumer benefit, DOE considered the reduced emissions expected to result over the lifetime of products shipped in the forecast period for each TSL. This section summarizes the basis for the monetary values used for each of these emissions and presents the values considered in this notice.

For this notice, DOE relied on a set of values for the SCC that was developed by a Federal interagency process. The basis for these values is summarized in the following sections, and a more detailed description of the methodologies used is provided as an appendix to chapter 14 of the NOPR TSD.

1. Social Cost of Carbon

The SCC is an estimate of the monetized damages associated with an incremental increase in carbon emissions in a given year. It is intended to include (but is not limited to) changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services. Estimates of the SCC are provided in dollars per metric ton of CO_2. A domestic SCC value is meant to reflect the value of damages in the United States resulting from a unit change in CO_2 emissions, while a global SCC value is meant to reflect the value of damages worldwide.

Under section 1(b) of Executive Order 12866, ''Regulatory Planning and Review,'' 58 FR 51735 (Oct. 4, 1993), agencies must, to the extent permitted by law, assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. The purpose of the SCC estimates presented here is to allow agencies to incorporate the monetized social benefits of reducing CO_2 emissions into cost-benefit analyses of regulatory actions. The estimates are presented with an acknowledgement of the many uncertainties involved and with a clear understanding that they should be updated over time to reflect increasing knowledge of the science and economics of climate impacts.

As part of the interagency process that developed these SCC estimates, technical experts from numerous agencies met on a regular basis to consider public comments, explore the technical literature in relevant fields, and discuss key model inputs and assumptions. The main objective of this process was to develop a range of SCC values using a defensible set of input assumptions grounded in the existing scientific and economic literatures. In this way, key uncertainties and model differences transparently and consistently inform the range of SCC estimates used in the rulemaking process.

a. Monetizing Carbon Dioxide Emissions

When attempting to assess the incremental economic impacts of CO_2 emissions, the analyst faces a number of challenges. A report from the National Research Council[45] points out that any assessment will suffer from uncertainty, speculation, and lack of information about: (1) Future emissions of GHGs, (2) the effects of past and future emissions on the climate system, (3) the impact of changes in climate on the physical and biological environment, and (4) the translation of these environmental impacts into economic damages. As a result, any effort to quantify and monetize the harms associated with climate change will raise questions of science, economics, and ethics, and should be viewed as provisional.

Despite the limits of both quantification and monetization, SCC estimates can be useful in estimating the social benefits of reducing CO_2 emissions. The agency can estimate the benefits from reduced (or costs from increased) emissions in any future year by multiplying the change in emissions in that year by the SCC values appropriate for that year. The NPV of the benefits can then be calculated by multiplying each of these future benefits by an appropriate discount factor and summing across all affected years.

It is important to emphasize that the interagency process is committed to updating these estimates as the science and economic understanding of climate changes and its impacts on society improves over time. In the meantime, the interagency group will continue to explore the issues raised by this analysis and will consider public comments as part of the ongoing interagency process.

b. Development of Social Cost of Carbon Values

In 2009, an interagency process was initiated to offer a preliminary assessment of how best to quantify the benefits from reducing carbon dioxide emissions. To ensure consistency in how benefits are evaluated across Federal agencies, the Administration sought to develop a transparent and defensible method, specifically designed for the rulemaking process, to

[44] CSAPR also applies to NO_X, and it would supersede the regulation of NO_X under CAIR. As stated previously, the current analysis assumes that CAIR, not CSAPR, is the regulation in force. The difference between CAIR and CSAPR with regard to DOE's analysis of NO_X is slight.

[45] National Research Council. *Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use.* National Academies Press: Washington, DC (2009).

quantify avoided climate change damages from reduced CO_2 emissions. The interagency group did not undertake any original analysis. Instead, it combined SCC estimates from the existing literature to use as interim values until a more comprehensive analysis could be conducted. The outcome of the preliminary assessment by the interagency group was a set of five interim values: Global SCC estimates for 2007 (in 2006$) of $55, $33, $19, $10, and $5 per metric ton of CO_2. These interim values represented the first sustained interagency effort within the U.S. government to develop an SCC for use in regulatory analysis. The results of this preliminary effort were presented in several proposed and final rules.

c. Current Approach and Key Assumptions

After the release of the interim values, the interagency group reconvened on a regular basis to generate improved SCC estimates. Specifically, the group considered public comments and further explored the technical literature in relevant fields. The interagency group relied on three integrated assessment models commonly used to estimate the SCC: the FUND, DICE, and PAGE models. These models are frequently cited in the peer-reviewed literature and were used in the last assessment of the Intergovernmental Panel on Climate Change (IPCC). Each model was given equal weight in the SCC values that were developed.

Each model takes a slightly different approach in modeling how changes in emissions result in changes in economic damages. A key objective of the interagency process was to enable a consistent exploration of the three models, while respecting the different approaches to quantifying damages taken by the key modelers in the field. An extensive review of the literature was conducted to select three sets of input parameters for these models: Climate sensitivity, socio-economic and emissions trajectories, and discount rates. A probability distribution for climate sensitivity was specified as an input into all three models. In addition, the interagency group used a range of scenarios for the socio-economic parameters and a range of values for the discount rate. All other model features were left unchanged, relying on the model developers' best estimates and judgments.

The interagency group selected four sets of SCC values for use in regulatory analyses. Three sets of values are based on the average SCC from the three integrated assessment models, at discount rates of 2.5, 3, and 5 percent. The fourth set, which represents the 95th percentile SCC estimate across all three models at a 3-percent discount rate, was included to represent higher-than-expected impacts from temperature change further out in the tails of the SCC distribution. The values grow in real terms over time. Additionally, the interagency group determined that a range of values from 7 percent to 23 percent should be used to adjust the global SCC to calculate domestic effects,[46] although preference is given to consideration of the global benefits of reducing CO_2 emissions. Table IV.5 presents the values in the 2010 interagency group report,[47] which is reproduced in appendix 14–A of the NOPR TSD.

TABLE IV.5—ANNUAL SCC VALUES FROM 2010 INTERAGENCY REPORT, 2010–2050

[2007$ per Metric Ton CO_2]

Year	Discount rate			
	5% Average	3% Average	2.5% Average	3% 95th percentile
2010	4.7	21.4	35.1	64.9
2015	5.7	23.8	38.4	72.8
2020	6.8	26.3	41.7	80.7
2025	8.2	29.6	45.9	90.4
2030	9.7	32.8	50.0	100.0
2035	11.2	36.0	54.2	109.7
2040	12.7	39.2	58.4	119.3
2045	14.2	42.1	61.7	127.8
2050	15.7	44.9	65.0	136.2

The SCC values used for this notice were generated using the most recent versions of the three integrated assessment models that have been published in the peer-reviewed literature.[48]

Table IV.6 shows the updated sets of SCC estimates in 5-year increments from 2010 to 2050. The full set of annual SCC estimates between 2010 and 2050 is reported in appendix 14–B of the NOPR TSD. The central value that emerges is the average SCC across models at the 3-percent discount rate. However, for purposes of capturing the uncertainties involved in regulatory impact analysis, the interagency group emphasizes the importance of including all four sets of SCC values.

[46] It is recognized that this calculation for domestic values is approximate, provisional, and highly speculative. There is no *a priori* reason why domestic benefits should be a constant fraction of net global damages over time.

[47] *Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866.* Interagency Working Group on Social Cost of Carbon, United States Government (February 2010) (Available at: *www.whitehouse.gov/sites/default/files/omb/inforeg/for-agencies/Social-Cost-of-Carbon-for-RIA.pdf*).

[48] *Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866,* Interagency Working Group on Social Cost of Carbon, United States Government (May 2013; revised November 2013) (Available at: *http://www.whitehouse.gov/sites/default/files/omb/assets/inforeg/technical-update-social-cost-of-carbon-for-regulator-impact-analysis.pdf*).

TABLE IV.6—ANNUAL SCC VALUES FROM 2013 INTERAGENCY REPORT, 2010–2050 (2007$ PER METRIC TON CO_2)

Year	Discount rate			
	5% Average	3% Average	2.5% Average	3% 95th percentile
2010	11	32	51	89
2015	11	37	57	109
2020	12	43	64	128
2025	14	47	69	143
2030	16	52	75	159
2035	19	56	80	175
2040	21	61	86	191
2045	24	66	92	206
2050	26	71	97	220

It is important to recognize that a number of key uncertainties remain, and that current SCC estimates should be treated as provisional and revisable because they will evolve with improved scientific and economic understanding. The interagency group also recognizes that the existing models are imperfect and incomplete. The 2009 National Research Council report points out that there is tension between the goal of producing quantified estimates of the economic damages from an incremental ton of carbon and the limits of existing efforts to model these effects. There are a number of analytical challenges that are being addressed by the research community, including research programs housed in many of the Federal agencies participating in the interagency process to estimate the SCC. The interagency group intends to periodically review and reconsider those estimates to reflect increasing knowledge of the science and economics of climate impacts, as well as improvements in modeling.

In summary, in considering the potential global benefits resulting from reduced CO_2 emissions, DOE used the values from the 2013 interagency report adjusted to 2014$ using the implicit price deflator for GDP from the Bureau of Economic Analysis. For each of the four sets of SCC values, the values for emissions in 2015 were $12.2, $41.1, $63.3, and $121 per metric ton avoided (values expressed in 2014$). DOE derived values after 2050 using the relevant growth rates for the 2040–2050 period in the interagency update.

DOE multiplied the CO_2 emissions reduction estimated for each year by the SCC value for that year in each of the four cases. To calculate a present value of the stream of monetary values, DOE discounted the values in each of the four cases using the specific discount rate that had been used to obtain the SCC values in each case.

2. Valuation of Other Emissions Reductions

DOE has taken into account how amended energy conservation standards would reduce site NO_X emissions nationwide and increase power sector NO_X emissions in those 22 States not affected by the CAIR. DOE estimated the monetized value of net NO_X emissions reductions resulting from each of the TSLs considered for this notice based on estimates found in the relevant scientific literature. Estimates of monetary value for reducing NO_X from stationary sources range from $483 to $4,964 per short ton in 2014$.[49] DOE calculated monetary benefits using a medium value for NO_X emissions of $2,723 per short ton (in 2014$), and real discount rates of 3 percent and 7 percent.

DOE is evaluating appropriate monetization of avoided SO_2 and Hg emissions in energy conservation standards rulemakings. DOE has not included monetization of those emissions in the current analysis.

M. Utility Impact Analysis

The utility impact analysis estimates several effects on the electric power generation industry that would result from the adoption of new or amended energy conservation standards. In the utility impact analysis, DOE analyzes the changes in installed electrical capacity and generation that would result for each TSL. The utility impact analysis is based on published output from NEMS, which is a public domain, multi-sectored, partial equilibrium model of the U.S. energy sector. Each year, NEMS is updated to produce the *AEO* reference case, as well as a number of side cases that estimate the economy-wide impacts of changes to energy supply and demand. DOE uses published side cases that incorporate efficiency-related policies to estimate the marginal impacts of reduced energy demand on the utility sector. The output of this analysis is a set of time-dependent coefficients that capture the change in electricity generation, primary fuel consumption, installed capacity, and power sector emissions due to a unit reduction in demand for a given end use. These coefficients are multiplied by the stream of energy savings calculated in the NIA to provide estimates of selected utility impacts of new or amended energy conservation standards. Chapter 15 of the NOPR TSD describes the utility impact analysis in further detail.

N. Employment Impact Analysis

DOE considers employment impacts in the domestic economy as one factor in selecting a proposed standard. Employment impacts include both direct and indirect impacts. Direct employment impacts are any changes in the number of employees of manufacturers of the product subject to standards, their suppliers, and related service firms. The direct employment impacts are addressed in the MIA. Indirect employment impacts from standards consist of the net jobs created or eliminated in the national economy, other than those in the manufacturing sector being regulated, caused by: (1) Reduced spending by end users on energy and water, (2) reduced spending on new energy supply by the utility industry, (3) potential increased spending on new products to which the new standards apply, and (4) the effects of those three factors throughout the economy.

One method for assessing the possible effects on the demand for labor of such shifts in economic activity is to compare sector employment statistics developed by the Labor Department's Bureau of

[49] U.S. Office of Management and Budget, Office of Information and Regulatory Affairs. *2006 Report to Congress on the Costs and Benefits of Federal Regulations and Unfunded Mandates on State, Local, and Tribal Entities* (2006) (Available at: *www.whitehouse.gov/sites/default/files/omb/assets/omb/inforeg/2006_cb/2006_cb_final_report.pdf.*).

Labor Statistics (BLS).[50] The BLS regularly publishes its estimates of the number of jobs per million dollars of economic activity in different sectors of the economy, as well as the jobs created elsewhere in the economy by this same economic activity. Data from BLS indicate that expenditures in the utility sector generally create fewer jobs (both directly and indirectly) than expenditures in other sectors of the economy.[51] There are many reasons for these differences, including wage differences and the fact that the utility sector is more capital-intensive and less labor-intensive than other sectors. Energy conservation standards have the effect of reducing consumer utility bills. Because reduced consumer expenditures for energy likely lead to increased expenditures in other sectors of the economy, the general effect of efficiency standards is to shift economic activity from a less labor-intensive sector (*i.e.,* the utility sector) to more labor-intensive sectors (*e.g.,* the retail and service sectors). Thus, based on the BLS data alone, DOE believes net national employment will increase due to shifts in economic activity resulting from amended standards for commercial prerinse spray valves.

For the amended standard levels considered in this notice, DOE estimated indirect national employment impacts using an input/output model of the U.S. economy called Impact of Sector Energy Technologies version 3.1.1 (ImSET).[52] ImSET is a special-purpose version of the ''U.S. Benchmark National Input-Output'' (I–O) model, which was designed to estimate the national employment and income effects of energy-saving technologies. The ImSET software includes a computer-based I–O model having structural coefficients that characterize economic flows among 187 sectors most relevant to industrial, commercial, and residential building energy use.

DOE notes that ImSET is not a general equilibrium forecasting model, and understands the uncertainties involved in projecting employment impacts, especially changes in the later years of the analysis. Because ImSET does not incorporate price changes, the employment effects predicted by ImSET may over-estimate actual job impacts over the long run for this rulemaking. Because ImSET predicts small job impacts resulting from this rulemaking, regardless of these uncertainties, the actual job impacts are likely to be negligible in the overall economy. For more details on the employment impact analysis, see chapter 16 of the NOPR TSD.

V. Analytical Results

The following section addresses the results from DOE's analyses with respect to potential amended energy conservation standards for commercial prerinse spray valves. It addresses the TSLs examined by DOE and the projected impacts of each of these levels if adopted as energy conservation standards for commercial prerinse spray valves. Additional details regarding DOE's analyses are contained in the NOPR TSD supporting this notice.

A. Trial Standard Levels

DOE analyzed the benefits and burdens of four TSLs for commercial prerinse spray valves. These TSLs were developed using combinations of efficiency levels (ELs) for the product classes analyzed by DOE. DOE presents the results for those TSLs in this notice. DOE presents the results for all efficiency levels that were analyzed in the NOPR TSD. Table V.1 presents the TSLs and the corresponding efficiency levels for commercial prerinse spray valves. TSL 4 represents the maximum technologically feasible (''max-tech'') improvements in energy and water efficiency. TSL 3 is the combination of efficiency levels for each product class that yields the maximum total NPV. TSL 2 consists of the next efficiency level below the max-tech level for all product classes. TSL 1 consists of the first efficiency level considered above the baseline for all commercial prerinse spray valve product classes.

TABLE V.1—TRIAL STANDARD LEVELS FOR COMMERCIAL PRERINSE SPRAY VALVES

TSL	Light duty (≤5 ozf)		Standard duty (>5 ozf and ≤8 ozf)		Heavy duty (>8 ozf)	
	EL	Flow rate (gpm)	EL	Flow rate (gpm)	EL	Flow rate (gpm)
1	1	0.72	1	1.10	1	1.44
2	2	0.68	2	0.97	2	1.28
3	3	0.65	2	0.97	3	1.24
4	3	0.65	3	0.94	3	1.24

B. Economic Justification and Energy Savings

1. Economic Impacts on Individual Consumers

DOE analyzed the economic impacts on commercial prerinse spray valve consumers by looking at the effects potential amended standards would have on the LCC and PBP. DOE also examined the impacts of potential standards on consumer subgroups. These analyses are discussed below.

a. Life-Cycle Cost and Payback Period

To evaluate the net economic impact of potential amended energy conservation standards on consumers of commercial prerinse spray valves, DOE conducted an LCC and PBP analysis for each TSL. In general, higher-efficiency products would affect consumers in two ways: (1) Purchase price would increase and (2) annual operating costs would decrease. Because DOE did not find that the purchase price of commercial prerinse spray valves increased with increasing efficiency, the only effect of higher-efficiency products to consumers is decreased operating costs. Inputs used for calculating the LCC and PBP include total installed costs (*i.e.,* product price plus installation costs) and operating costs (*i.e.,* energy, and combined water prices, energy and combined water price trends). The LCC calculation also uses product lifetime and a discount rate. Chapter 8 of the

[50] Data on industry employment, hours, labor compensation, value of production, and the implicit price deflator for output for these industries are available upon request by calling the Division of Industry Productivity Studies (202–691–5618) or by sending a request by email to *dipsweb@bls.gov*.

[51] See Bureau of Economic Analysis, *Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System (RIMS II),* U.S. Department of Commerce (1992).

[52] J.M. Roop, M.J. Scott, and R.W. Schultz. *ImSET 3.1: Impact of Sector Energy Technologies,* PNNL–18412, Pacific Northwest National Laboratory (2009) (Available at: *www.pnl.gov/main/publications/external/technical_reports/PNNL-18412.pdf*).

NOPR TSD provides detailed information on the LCC and PBP analyses.

Table V.2 through Table V.7 show the LCC and PBP results for all efficiency levels considered for commercial prerinse spray valves. In the first of each pair of tables, the simple payback is measured relative to the baseline product. In the second of each pair of tables, the LCC savings are measured relative to the no-standards case efficiency distribution in the first year of the analysis period (see section IV.F.9 of this notice). No impacts occur when the no-standards case efficiency for a specific consumer equals or exceeds the efficiency at a given TSL as a standard would have no effect because the product installed would be at or above that standard level without amended standards. For commercial prerinse spray valves, DOE determined that there was no increase in purchase price with increasing efficiency level within each product class. Therefore, LCC and PBP results instead reflect differences in operating costs due to decreased energy and water use for each EL.

TABLE V.2—AVERAGE LCC AND PBP RESULTS BY EFFICIENCY LEVEL FOR LIGHT DUTY (≤5 ozf) COMMERCIAL PRERINSE SPRAY VALVES

TSL	EL	Average costs (2014$)				Simple payback (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
	0	79	373	1,957	2,036		4.9
1	1	79	353	1,854	1,933	0.0	4.9
2	2	79	334	1,751	1,830	0.0	4.9
3, 4	3	79	319	1,674	1,753	0.0	4.9

NOTE: The results for each TSL are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

TABLE V.3—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS CASE EFFICIENCY DISTRIBUTION FOR LIGHT DUTY (≤5 ozf) COMMERCIAL PRERINSE SPRAY VALVES

TSL	EL	Life-cycle cost savings	
		% of consumers that experience (net cost)	Average savings* (2014$)
1	1	0	103
2	2	0	134
3, 4	3	0	211

*The calculation includes consumers with zero LCC savings (no impact).

TABLE V.4—AVERAGE LCC AND PBP RESULTS BY EFFICIENCY LEVEL FOR STANDARD DUTY (>5 ozf AND ≤8 ozf) COMMERCIAL PRERINSE SPRAY VALVES

TSL	EL	Average costs (2014$)				Simple payback (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
	0	79	599	3,141	3,220		4.9
1	1	79	540	2,832	2,911	0.0	4.9
2, 3	2	79	476	2,498	2,577	0.0	4.9
4	3	79	461	2,420	2,499	0.0	4.9

NOTE: The results for each TSL are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

TABLE V.5—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS CASE EFFICIENCY DISTRIBUTION FOR STANDARD DUTY (>5 ozf AND ≤8 ozf) COMMERCIAL PRERINSE SPRAY VALVES

TSL	EL	Life-cycle cost savings	
		% of consumers that experience (net cost)	Average savings* (2014$)
1	1	0	309
2, 3	2	0	472

TABLE V.5—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS CASE EFFICIENCY DISTRIBUTION FOR STANDARD DUTY (>5 ozf AND ≤8 ozf) COMMERCIAL PRERINSE SPRAY VALVES—Continued

TSL	EL	Life-cycle cost savings	
		% of consumers that experience (net cost)	Average savings * (2014$)
4	3	0	549

NOTE: The calculation includes consumers with zero LCC savings (no impact).

TABLE V.6—AVERAGE LCC AND PBP RESULTS BY EFFICIENCY LEVEL FOR HEAVY DUTY (>8 ozf) COMMERCIAL PRERINSE SPRAY VALVES

TSL	EL	Average costs (2014$)				Simple payback (years)	Average lifetime (years)
		Installed cost	First year's operating cost	Lifetime operating cost	LCC		
	0	79	785	4,120	4,199		4.9
1	1	79	707	3,708	3,787	0.0	4.9
2	2	79	628	3,296	3,375	0.0	4.9
3, 4	3	79	609	3,193	3,272	0.0	4.9

NOTE: The results for each TSL are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

TABLE V.7—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS CASE EFFICIENCY DISTRIBUTION FOR HEAVY DUTY (>8 ozf) COMMERCIAL PRERINSE SPRAY VALVES

TSL	EL	Life-cycle cost savings	
		% of consumers that experience (net cost)	Average savings * (2014$)
1	1	0	412
2	2	0	595
3, 4	3	0	667

NOTE: The calculation includes consumers with zero LCC savings (no impact).

b. Consumer Subgroup Analysis

As described in section IV.I of this notice, DOE determined the impact of the considered TSLs on small businesses and limited service establishments. Table V.8 through Table V.10 compare the average LCC savings at each efficiency level for the two consumer subgroups, along with the average LCC savings for the entire sample for each product class for commercial prerinse spray valves. The average LCC savings for single entities and limited service establishments at the considered efficiency levels are not substantially different from the average for all consumers. Chapter 11 of the NOPR TSD presents the complete LCC and PBP results for the two subgroups.

TABLE V.8—LIGHT DUTY (≤5 ozf) COMMERCIAL PRERINSE SPRAY VALVES: COMPARISON OF AVERAGE LCC SAVINGS FOR CONSUMER SUBGROUPS AND ALL CONSUMERS

TSL	Average life-cycle cost savings (2014$)			Simple payback period (years)		
	Single entities	Limited service establishments	All consumers	Single entities	Limited service establishments	All consumers
1	97	82	103	0.0	0.0	0.0
2	126	107	134	0.0	0.0	0.0
3	198	169	211	0.0	0.0	0.0
4	198	169	211	0.0	0.0	0.0

TABLE V.9—STANDARD DUTY (≤5 ozf AND >8 ozf) COMMERCIAL PRERINSE SPRAY VALVES: COMPARISON OF AVERAGE LCC SAVINGS FOR CONSUMER SUBGROUPS AND ALL CONSUMERS

TSL	Average life-cycle cost savings (2014$)			Simple payback period (years)		
	Single entities	Limited service establishments	All consumers	Single entities	Limited service establishments	All consumers
1	290	247	309	0.0	0.0	0.0
2	444	378	472	0.0	0.0	0.0
3	444	378	472	0.0	0.0	0.0
4	516	439	549	0.0	0.0	0.0

TABLE V.10—HEAVY DUTY (>8 ozf) COMMERCIAL PRERINSE SPRAY VALVES: COMPARISON OF AVERAGE LCC SAVINGS FOR CONSUMER SUBGROUPS AND ALL CONSUMERS

TSL	Average life-cycle cost savings (2014$)			Simple payback period (years)		
	Single entities	Limited service establishments	All consumers	Single entities	Limited service establishments	All consumers
1	387	330	412	0.0	0.0	0.0
2	559	476	595	0.0	0.0	0.0
3	627	533	667	0.0	0.0	0.0
4	627	533	667	0.0	0.0	0.0

c. Rebuttable Presumption Payback

As discussed in section IV.F.11, EPCA provides a rebuttable presumption that an energy conservation standard is economically justified if the increased purchase cost for products that meets the standard is less than three times the value of the first-year energy and water savings resulting from the standard. In calculating a rebuttable presumption payback period for the considered standard levels, DOE used discrete values rather than distributions for input values, and, as required by EPCA, based the energy and water use calculation on the DOE test procedures for commercial prerinse spray valves. As a result, DOE calculated a single rebuttable presumption payback value, and not a distribution of payback periods, for each efficiency level. Table V.11 presents the rebuttable-presumption payback periods for the considered TSLs. While DOE examined the rebuttable-presumption criterion, it considered whether the standard levels considered for this proposed rule are economically justified through a more detailed analysis of the economic impacts of those levels pursuant to 42 U.S.C. 6295(o)(2)(B)(i). The results of that analysis serve as the basis for DOE to evaluate the economic justification for a potential standard level (thereby supporting or rebutting the results of any preliminary determination of economic justification). As indicated in the engineering analysis, there is no increased purchase cost for products that meets the standard, so the rebuttable PBP for each considered TSL is zero.

TABLE V.11—COMMERCIAL PRERINSE SPRAY VALVES: REBUTTABLE PBPS

Product class	Rebuttable payback period for trial standard level (years)			
	1	2	3	4
Light Duty (≤5 ozf)	0.0	0.0	0.0	0.0
Standard Duty (>5 ozf and ≤8 ozf)	0.0	0.0	0.0	0.0
Heavy Duty (>8 ozf)	0.0	0.0	0.0	0.0

2. Economic Impacts on Manufacturers

DOE performed an MIA to estimate the impact of amended energy conservation standards on manufacturers of commercial prerinse spray valves. Section V.B.2.a describes the expected impacts on manufacturers at each TSL. Chapter 12 of the NOPR TSD explains the analysis in further detail.

a. Industry Cash Flow Analysis Results

DOE modeled two scenarios using different markup assumptions and two scenarios using different conversion cost assumptions, for a total of four different scenarios, in order to evaluate the range of cash flow impacts on the commercial prerinse spray valve manufacturing industry of amended energy conservation standards. However, as described in section IV.J.2, given constant manufacturing production costs for all product classes and across all standard efficiency levels, and constant total industry shipments, there is no difference in INPV impacts between the two markup scenarios. Therefore, DOE reports only the two capital conversion cost scenario's INPV results. Each scenario results in a unique set of cash flows and corresponding industry value at each TSL. These assumptions correspond to the bounds of a range of capital conversion costs that DOE anticipates could occur in the standards case. The following tables illustrate the financial impacts (represented by changes in INPV) of amended energy conservation standards on manufacturers of commercial prerinse spray valves, as well as the conversion costs that DOE estimates manufacturers would incur for each product class at each TSL.

The INPV results refer to the difference in industry value between the no-standards case and the standards case, which DOE calculated by summing the discounted industry cash flows from the base year (2015) through the end of the analysis period (2048). The discussion also notes the difference in cash flow between the no-standards case and the standards case in the year before the compliance date of potential amended energy conservation standards.

TABLE V.12—MANUFACTURER IMPACT ANALYSIS FOR COMMERCIAL PRERINSE SPRAY VALVES—WITH THE SOURCED COMPONENTS CAPITAL CONVERSION COSTS SCENARIO

	Units	No-standards case	Trial standard level			
			1	2	3	4
INPV	*2014$ millions*	9.1	8.5	8.1	8.0	8.0
Change in INPV	*2014$ millions*		(0.6)	(1.0)	(1.1)	(1.1)
	%		(7.0)	(11.5)	(12.1)	(12.1)
Product Conversion Costs	*2014$ millions*		1.1	1.7	1.8	1.8
Capital Conversion Costs	*2014$ millions*		0.1	0.2	0.2	0.2
Total Conversion Costs	*2014$ millions*		1.2	1.9	2.0	2.0
Free Cash Flow (2018)	2014$ millions	0.5	0.17	(0.04)	(0.07)	(0.07)
	% Change		(65.8)	(108.2)	(113.8)	(113.8)

* Parentheses indicate negative values.

TABLE V.13—MANUFACTURER IMPACT ANALYSIS FOR COMMERCIAL PRERINSE SPRAY VALVES—WITH THE FABRICATED COMPONENTS CAPITAL CONVERSION COSTS SCENARIO

	Units	No-standards case	Trial standard level			
			1	2	3	4
INPV	*2014$ millions*	9.1	7.7	7.2	7.1	7.1
Change in INPV	*2014$ millions*		(1.4)	(1.9)	(2.0)	(2.0)
	%		(15.0)	(21.0)	(21.6)	(21.6)
Product Conversion Costs	*2014$ millions*		1.1	1.7	1.8	1.8
Capital Conversion Costs	*2014$ millions*		0.9	1.2	1.2	1.2
Total Conversion Costs	*2014$ millions*		2.0	2.9	3.0	3.0
Free Cash Flow (2018)	*2014$ millions*	0.5	(0.2)	(0.5)	(0.5)	(0.5)
	% Change		(142.8)	(198.8)	(204.4)	(204.4)

* Parentheses indicate negative values.

At TSL 1, DOE estimates impacts on INPV to range from −$1.4 million to −$0.6 million, or a change in INPV of −15.0 percent to −7.0 percent for the Fabricated Components and Sourced Components Capital Conversion Costs scenarios, respectively. At this level, industry free cash flow is estimated to decrease by as much as 142.8 percent to −$0.2 million, compared to the no-standards case value of $0.5 million in the year leading up to the amended energy conservation standards. As DOE forecasts that approximately 65 percent of commercial prerinse spray valves in the no-standards case shipments scenario will meet TSL 1 in the first year that standards are in effect (2019), 35 percent of the market is affected at this standard level. The impact on INPV at TSL 1 stems exclusively from the conversion costs associated with the conversion of baseline units to those meeting the standards set at TSL 1. At TSL 1, because the industry already produces a substantial number of products at this efficiency level, product and capital conversion costs are limited to approximately $1.2 million for the Sourced Components Capital Conversion Costs scenario and $2.0 million for the Fabricated Components Capital Conversion Costs scenario.

DOE notes that the shift of 20 percent of shipments from the Standard Duty to Heavy Duty product class does not have a significant impact on overall INPV because MPCs are the same across all product classes. For this reason, and because per-unit product conversion costs are the same for any product that has a change in flow rate and spray force at each efficiency level, and because capital conversion costs are a function of the material of the spray nozzle rather than the spray force (*i.e.,* product class), DOE does not believe product class switching will have a detrimental impact on commercial prerinse spray valve manufacturers beyond the impact felt in the absence of product class switching.

At TSL 2, DOE estimates impacts on INPV to range from −$1.9 million to −$1.0 million, or a change in INPV of −21.0 percent to −11.5 percent for the Fabricated Components and Sourced Components Capital Conversion Costs scenarios, respectively. At this level, industry free cash flow is estimated to decrease by as much as 198.8 percent to −$0.5 million, compared to the no-standards case value of $0.5 million in the year leading up to the amended energy conservation standards. As it is estimated that only approximately 20 percent of commercial prerinse spray valves will meet the efficiency levels specified at TSL 2 in the first year that standards are in effect (2019), a substantial fraction of the market is affected at this standard level. As with TSL 1, the impact on INPV at TSL 2 stems exclusively from the conversion costs associated with the conversion of lower efficiency units to those meeting the standards set at TSL 2. At TSL 2, because the majority of commercial prerinse spray valves will have to be updated to reach the standard level, product and capital conversion costs are estimated to be approximately $1.9 million for the Sourced Components Capital Conversion Costs scenario and $2.9 million for the Fabricated Components Capital Conversion Costs scenario. Again, DOE notes that the shift of 20 percent of shipments from the Standard Duty to Heavy Duty product class, at this TSL does not have a significant impact on overall INPV due to the fact that MPCs are constant across all product classes and conversion costs are not a function of product class.

At TSL 3, DOE estimates impacts on INPV to range from −$2.0 million to −$1.1 million, or a change in INPV of −21.6 percent to −12.1 percent for the Fabricated Components and Sourced Components Capital Conversion Cost scenarios, respectively. At this level, industry free cash flow is estimated to decrease by as much as 204.4 percent to −$0.5 million, compared to the no-standards case value of $0.5 million in the year leading up to the amended energy conservation standards. As it is estimated that less than 20 percent of commercial prerinse spray valves will meet the efficiency levels specified at TSL 3 in the first year that standards are in effect (2019), a substantial fraction of the market is affected at this standard level. Again, the impact on INPV at TSL 3 stems exclusively from the conversion costs associated with the conversion of lower efficiency units to those meeting the standards set at TSL 3. At this TSL, because the majority of commercial prerinse spray valves will have to be updated to reach the standard level, product and capital conversion costs are estimated to be approximately $2.0 million for the Sourced Components Capital Conversion Costs scenario and $3.0 million for the Fabricated Components Capital Conversion Costs model. Again, DOE notes that the shift of 20 percent of shipments from the Standard Duty to Heavy Duty product class, at this TSL does not have a significant impact on overall INPV due to the fact that MPCs are constant across all product classes and conversion costs are not a function of product class.

Finally, at TSL 4, DOE estimates impacts on INPV to range from −$2.0 million to −$1.1 million, or a change in INPV of −21.6 percent to −12.1 percent for the Fabricated Components and Sourced Components Capital Conversion Cost scenarios, respectively. Impacts are the same as at TSL 3 due to the fact that no Standard Duty commercial prerinse spray valves at efficiency level 2 (greater than 0.94 gpm and less than or equal to 0.97 gpm) are currently marketed. At this level, industry free cash flow is estimated to decrease by as much as 204.4 percent to −$0.5 million, compared to the no-standards case value of $0.5 million in the year leading up to the amended energy conservation standards. Again, the impact on INPV at TSL 4 stems exclusively from the conversion costs associated with the conversion of lower efficiency units to those meeting the standards set at TSL 4. At this TSL, because the majority of commercial prerinse spray valves will have to be updated to reach the standard level, product and capital conversion costs are estimated to be approximately $2.0 million for the Sourced Components Capital Conversion Costs scenario and $3.0 million for the Fabricated Components Capital Conversion Costs scenario. DOE notes that the shift of 45 percent of shipments from the Standard Duty to Heavy Duty product class, at this TSL does not have a significant impact on overall INPV due to the fact that MPCs are constant across all product classes and conversion costs are not a function of product class.

b. Impacts on Employment

DOE used the GRIM to estimate the domestic labor expenditures and number of domestic production workers in the no-standards case and at each TSL from 2014 to 2048. DOE used the labor content of each product and the MPCs from the engineering analysis to estimate the total annual labor expenditures associated with commercial prerinse spray valves sold in the United States. Using statistical data from the most recent U.S. Census Bureau's 2011 ''Annual Survey of Manufactures'' (2011 ASM) as well as market research, DOE estimates that 100 percent of commercial prerinse spray valves sold in the United States are assembled domestically, and hence that portion of total labor expenditures is attributable to domestic labor. Labor expenditures for the manufacturing of products are a function of the labor intensity of the product, the sales volume, and an assumption that wages in real terms remain constant.

Using the GRIM, DOE forecasts the domestic labor expenditure for commercial prerinse spray valve production labor in 2019 will be approximately $2.0 million. Using the $21.86 hourly wage rate including fringe benefits and 2,039 production hours per year per employee found in the 2011 ASM, DOE estimates there will be approximately 44 domestic production workers involved in assembling and, to a lesser extent, fabricating components for commercial prerinse spray valves in 2019, the year in which any amended standards would go into effect. In addition, DOE estimates that 22 non-production employees in the United States will support commercial prerinse spray valve production. The employment spreadsheet of the commercial prerinse spray valve GRIM shows the annual domestic employment impacts in further detail.

The production worker estimates in this section cover workers only up to the line-supervisor level who are directly involved in fabricating and assembling commercial prerinse spray valves within an original equipment manufacturer (OEM) facility. Workers performing services that are closely associated with production operations, such as material handling with a forklift, are also included as production labor. Additionally, the employment impacts shown are independent of the employment impacts from the broader U.S. economy, which are documented in chapter 12 of the NOPR TSD.

Table V.14 depicts the potential levels of production employment that could result following amended energy conservation standards as calculated by the GRIM. The employment levels shown reflect the scenario in which manufacturers continue to produce the same scope of covered products in domestic facilities and domestic production is not shifted to lower-labor-cost countries. The following discussion includes a qualitative evaluation of the likelihood of negative domestic production employment impacts at the various TSLs.

TABLE V.14—TOTAL NUMBER OF DOMESTIC COMMERCIAL PRERINSE SPRAY VALVE PRODUCTION WORKERS IN 2019

	No-standards case	Trial standard level			
		1	2	3	4
Total Number of Domestic Production Workers in 2019 (without changes in production locations)	44	44	44	44	44

The design option specified for achieving greater efficiency levels (*i.e.* changing the total spray hole area of the commercial prerinse spray valve nozzle) does not increase the labor content (measured in dollars) of commercial prerinse spray valves at any EL, nor does it increase total MPC. Additionally, total industry shipments are forecasted to be constant across TSLs. Therefore, DOE predicts no change in domestic manufacturing employment levels provided manufacturers do not relocate production facilities outside of the United States.

c. Impacts on Manufacturing Capacity

Less than 20 percent of shipments of commercial prerinse spray valves already comply with the amended energy conservation standards proposed in this rulemaking. Not every manufacturer that ships commercial prerinse spray valves offers products that meet these amended energy conservation standards. However, because DOE believes that manufacturers would not need to make substantial platform changes by the 2019 compliance date in order to upgrade their products to meet the amended energy conservation standards proposed in this rulemaking, DOE does not foresee any impact on manufacturing capacity during the period leading up to the compliance date. DOE seeks additional comment on the impact to manufacturing capacity between the issuance date and the compliance date of any amended energy conservation standards for commercial prerinse spray valves.

d. Impacts on Subgroups of Manufacturers

Using average cost assumptions to develop an industry cash-flow estimate may not be adequate for assessing differential impacts among manufacturer subgroups. Small manufacturers, niche product manufacturers, and manufacturers exhibiting a cost structure substantially different from the industry average could be affected disproportionately. DOE examined the potential for disproportionate impacts on small business manufacturers, as discussed in section VI.B of this notice. DOE did not identify any other manufacturer subgroups for this rulemaking.

e. Cumulative Regulatory Burden

While any one regulation may not impose a significant burden on manufacturers, the combined effects of several impending regulations may have serious consequences for some manufacturers, groups of manufacturers, or an entire industry. Assessing the impact of a single regulation may overlook this cumulative regulatory burden. In addition to energy conservation standards, other regulations can significantly affect manufacturers' financial operations. Multiple regulations affecting the same manufacturer can strain profits and can lead companies to abandon product lines or markets with lower expected future returns than competing products. For these reasons, DOE conducts an analysis of cumulative regulatory burden as part of its energy conservation standards rulemakings.

For the cumulative regulatory burden, DOE considers other DOE regulations that could affect commercial prerinse spray valve manufacturers that will take effect approximately 3 years before or after the analysis compliance date of amended energy conservation standards. The compliance years and expected industry conversion costs of energy conservation standards that may also impact commercial prerinse spray valve manufacturers are indicated in Table V.15

TABLE V.15—COMPLIANCE DATES AND EXPECTED CONVERSION EXPENSES OF FEDERAL ENERGY CONSERVATION STANDARDS AFFECTING COMMERCIAL PRERINSE SPRAY VALVE MANUFACTURERS

Regulation	Approximate compliance date	Estimated conversion costs (million)
General Service Fluorescent Lamps; 80 FR 4041 (January 26, 2015)	1/26/2018	$38.6
Commercial Refrigerators, Freezers and Refrigerator-Freezers; 79 FR 17725 (March 28, 2014)	3/27/2017	43.1
External Power Supplies; 79 FR 7846 (February 10, 2014)	2/10/2016	43.4

* Estimated compliance date.

In addition to DOE's energy conservation regulations for commercial prerinse spray valves and other products also sold by commercial prerinse spray valve manufacturers, several other existing and pending regulations apply to commercial prerinse spray valves. In response to the Framework document and public meeting for this rulemaking, manufacturers and trade groups provided comments relating to regulatory burdens associated with third-party and international industry standards and certification programs (*e.g.,* ASME A112.18.1/CSA B125.1, ASTM F2324) and state water efficiency regulations (*e.g.* California, Texas, and Massachusetts). DOE summarized these comments in section IV.J.3 of this notice. See chapter 12 of the NOPR TSD for the results of DOE's analysis of the cumulative regulatory burden.

3. National Impact Analysis

a. Significance of Energy Savings

To estimate the energy and water savings attributable to potential standards for commercial prerinse spray valves, DOE compared the energy and water consumption of these product types under the no-standards case to their anticipated energy and water consumption under each TSL. Table V.16 through Table V.19 present DOE's projections of the national energy savings and national water savings for each TSL considered for commercial prerinse spray valves. The savings were calculated using the approach described in section IV.H.1 of this notice.

TABLE V.16—COMMERCIAL PRERINSE SPRAY VALVES: CUMULATIVE NATIONAL ENERGY AND WATER SAVINGS FOR PRODUCTS SHIPPED IN 2019–2048 FOR TSL 1

TSL	Product class	National energy savings (*quads*) *		National water savings (*billion gal*)
		Primary	FFC	
1	Light Duty (≤5 ozf)	0.001	0.001	1.305
	Standard Duty (>5 ozf and ≤8 ozf)	0.206	0.223	265.371
	Heavy Duty (>8 ozf)	(0.193)	(0.209)	(248.840)
	TOTAL TSL 1	0.014	0.015	17.836

* quads = quadrillion British thermal units.

TABLE V.17—COMMERCIAL PRERINSE SPRAY VALVES: CUMULATIVE NATIONAL ENERGY AND WATER SAVINGS FOR PRODUCTS SHIPPED IN 2019–2048 FOR TSL 2

TSL	Product class	National energy savings (*quads*) *		National water savings (*billion gal*)
		Primary	FFC	
2	Light Duty (≤5 ozf)	0.004	0.005	5.655
	Standard Duty (>5 ozf and ≤8 ozf)	0.234	0.252	300.718
	Heavy Duty (>8 ozf)	(0.157)	(0.169)	(201.856)
	TOTAL TSL 2	0.081	0.088	104.517

* quads = quadrillion British thermal units.

TABLE V.18—COMMERCIAL PRERINSE SPRAY VALVES: CUMULATIVE NATIONAL ENERGY AND WATER SAVINGS FOR PRODUCTS SHIPPED IN 2019–2048 FOR TSL 3

TSL	Product class	National energy savings (*quads*) *		National water savings (*billion gal*)
		Primary	FFC	
3	Light Duty (≤5 ozf)	0.007	0.007	8.918
	Standard Duty (>5 ozf and ≤8 ozf)	0.234	0.252	300.718
	Heavy Duty (>8 ozf)	(0.147)	(0.159)	(189.458)
	TOTAL TSL 3	0.093	0.101	120.178

* quads = quadrillion British thermal units.

TABLE V.19—COMMERCIAL PRERINSE SPRAY VALVES: CUMULATIVE NATIONAL ENERGY AND WATER SAVINGS FOR PRODUCTS SHIPPED IN 2019–2048 FOR TSL 4

TSL	Product class	National energy savings (*quads*) *		National water savings (*billion gal*)
		Primary	FFC	
4	Light Duty (≤5 ozf)	0.007	0.007	8.918
	Standard Duty (>5 ozf and ≤8 ozf)	0.439	0.474	564.457
	Heavy Duty (>8 ozf)	(0.409)	(0.442)	(526.609)
	TOTAL TSL 4	0.036	0.039	46.766

* quads = quadrillion British thermal units.

OMB Circular A–4 requires agencies to present analytical results, including separate schedules of the monetized benefits and costs that show the type and timing of benefits and costs.[53] Circular A–4 also directs agencies to consider the variability of key elements underlying the estimates of benefits and costs. For this rulemaking, DOE undertook a sensitivity analysis using 9, rather than 30, years of product shipments. The choice of a 9-year period is a proxy for the timeline in EPCA for the review of certain energy conservation standards and potential revision of and compliance with such

[53] U.S. Office of Management and Budget, ''Circular A–4: Regulatory Analysis,'' section E, (Sept. 17, 2003) (Available at: *http://www.whitehouse.gov/omb/circulars_a004_a-4/*).

revised standards.[54] The review timeframe established in EPCA is generally not synchronized with the product lifetime, product manufacturing cycles, or other factors specific to CPSV equipment. Thus, such results are presented for informational purposes only, and are not indicative of any change in DOE's analytical methodology. Table V.20 through Table V.23 report cumulative national energy and water savings associated with this shorter analysis period of 2019–2027. The impacts are counted over the lifetime of products purchased during this period.

TABLE V.20—COMMERCIAL PRERINSE SPRAY VALVES: CUMULATIVE NATIONAL ENERGY AND WATER SAVINGS FOR PRODUCTS SHIPPED IN 2019–2027 FOR TSL 1

TSL	Equipment class	National energy savings (*quads*) *		National water savings (*billion gal*)
		Primary	FFC	
1	Light Duty (≤5 ozf)	0.000	0.000	0.352
	Standard Duty (>5 ozf and ≤8 ozf)	0.057	0.062	71.472
	Heavy Duty (>8 ozf)	(0.054)	(0.058)	(67.019)
	TOTAL TSL 1	0.004	0.004	4.804

* quads = quadrillion British thermal units.

TABLE V.21—COMMERCIAL PRERINSE SPRAY VALVES: CUMULATIVE NATIONAL ENERGY AND WATER SAVINGS FOR PRODUCTS SHIPPED IN 2019–2027 FOR TSL 2

TSL	Equipment class	National energy savings (*quads*) *		National water savings (*billion gal*)
		Primary	FFC	
2	Light Duty (≤5 ozf)	0.001	0.001	1.523
	Standard Duty (>5 ozf and ≤8 ozf)	0.065	0.070	80.992
	Heavy Duty (>8 ozf)	(0.044)	(0.047)	(54.365)
	TOTAL TSL 2	0.023	0.024	28.149

* quads = quadrillion British thermal units.

TABLE V.22—COMMERCIAL PRERINSE SPRAY VALVES: CUMULATIVE NATIONAL ENERGY AND WATER SAVINGS FOR PRODUCTS SHIPPED IN 2019–2027 FOR TSL 3

TSL	Equipment class	National energy savings (*quads*) *		National water savings (*billion gal*)
		Primary	FFC	
3	Light Duty (≤5 ozf)	0.002	0.002	2.402
	Standard Duty (>5 ozf and ≤8 ozf)	0.065	0.070	80.992
	Heavy Duty (>8 ozf)	(0.041)	(0.044)	(51.026)
	TOTAL TSL 3	0.026	0.028	32.367

* quads = quadrillion British thermal units.

TABLE V.23—COMMERCIAL PRERINSE SPRAY VALVES: CUMULATIVE NATIONAL ENERGY AND WATER SAVINGS FOR PRODUCTS SHIPPED IN 2019–2027 FOR TSL 4

TSL	Equipment class	National energy savings (*quads*) *		National water savings (*billion gal*)
		Primary	FFC	
4	Light Duty (≤5 ozf)	0.002	0.002	2.402
	Standard Duty (>5 ozf and ≤8 ozf)	0.122	0.131	152.024
	Heavy Duty (>8 ozf)	(0.114)	(0.122)	(141.830)
	TOTAL TSL 4	0.010	0.011	12.595

* quads = quadrillion British thermal units.

[54] EPCA requires DOE to review its standards at least once every 6 years, and requires, for certain products, a 3-year period after any new standard is promulgated before compliance is required, except that in no case may any new standards be required within 6 years of the compliance date of the previous standards. (42 U.S.C. 6313(a)(6)(C)) While adding a 6-year review to the 3-year compliance period adds up to 9 years, DOE notes that it may undertake reviews at any time within the 6-year period and that the 3-year compliance date may yield to the 6-year backstop. A 9-year analysis period may not be appropriate given the variability that occurs in the timing of standards reviews and the fact that for some consumer products, the compliance period is 5 years rather than 3 years.

b. Net Present Value of Consumer Costs and Benefits

DOE estimated the cumulative NPV to the nation of the total costs and savings for consumers that would result from particular standard levels for commercial prerinse spray valves. In accordance with OMB's guidelines on regulatory analysis, DOE calculated NPV using both a 7-percent and a 3-percent real discount rate.

Table V.24 through Table V.27 show the consumer NPV results for each TSL DOE considered for commercial prerinse spray valves. The impacts are counted over the lifetime of products purchased in 2019–2048.

TABLE V.24—COMMERCIAL PRERINSE SPRAY VALVES: CUMULATIVE NET PRESENT VALUE OF CONSUMER BENEFITS FOR PRODUCT SHIPPED IN 2019–2048 FOR TSL 1

TSL	Product class	Net present value (billion $2014)	
		7-percent discount rate	3-percent discount rate
1	Light Duty (≤5 ozf)	$0.008	$0.016
	Standard Duty (>5 ozf and ≤8 ozf)	1.604	3.295
	Heavy Duty (>8 ozf)	(1.507)	(3.095)
	TOTAL TSL 1	0.105	0.216

TABLE V.25—COMMERCIAL PRERINSE SPRAY VALVES: CUMULATIVE NET PRESENT VALUE OF CONSUMER BENEFITS FOR PRODUCT SHIPPED IN 2019–2048 FOR TSL 2

TSL	Product class	Net present value (billion $2014)	
		7-percent discount rate	3-percent discount rate
2	Light Duty (≤5 ozf)	$0.033	$0.069
	Standard Duty (>5 ozf and ≤8 ozf)	1.813	3.724
	Heavy Duty (>8 ozf)	(1.230)	(2.524)
	TOTAL TSL 2	0.616	1.269

TABLE V.26—COMMERCIAL PRERINSE SPRAY VALVES: CUMULATIVE NET PRESENT VALUE OF CONSUMER BENEFITS FOR PRODUCT SHIPPED IN 2019–2048 FOR TSL 3

TSL	Product class	Net present value (billion $2014)	
		7-percent discount rate	3-percent discount rate
3	Light Duty (≤5 ozf)	$0.053	$0.108
	Standard Duty (>5 ozf and ≤8 ozf)	1.813	3.724
	Heavy Duty (>8 ozf)	(1.157)	(2.374)
	TOTAL TSL 3	0.708	1.459

TABLE V.27—COMMERCIAL PRERINSE SPRAY VALVES: CUMULATIVE NET PRESENT VALUE OF CONSUMER BENEFITS FOR PRODUCT SHIPPED IN 2019–2048 FOR TSL 4

TSL	Product class	Net present value (billion $2014)	
		7-percent discount rate	3-percent discount rate
4	Light Duty (≤5 ozf)	$0.053	$0.108
	Standard Duty (>5 ozf and ≤8 ozf)	3.418	7.018
	Heavy Duty (>8 ozf)	(3.195)	(6.559)
	TOTAL TSL 4	0.276	0.568

As described previously in the discussion of the energy and water savings results, DOE also determined financial impacts for a sensitivity case utilizing a 9-year analysis period. Table V.28 through Table V.31 report NPV results associated with this shorter analysis period. The impacts are counted over the lifetime of products purchased in 2019–2027. As mentioned previously, this information is presented for informational purposes only, and is not indicative of any change in DOE's analytical methodology or decision criteria.

TABLE V.28—COMMERCIAL PRERINSE SPRAY VALVES: CUMULATIVE NET PRESENT VALUE OF CUSTOMER BENEFITS FOR EQUIPMENT SHIPPED IN 2019–2027 FOR TSL 1

TSL	Equipment class	Net present value (billion $2014)	
		7-percent discount rate	3-percent discount rate
1	Light Duty (≤5 ozf)	$0.003	$0.005
	Standard Duty (>5 ozf and ≤8 ozf)	0.708	1.034
	Heavy Duty (>8 ozf)	(0.665)	(0.971)
	TOTAL TSL 1	0.046	0.068

TABLE V.29—COMMERCIAL PRERINSE SPRAY VALVES: CUMULATIVE NET PRESENT VALUE OF CUSTOMER BENEFITS FOR EQUIPMENT SHIPPED IN 2019–2027 FOR TSL 2

TSL	Equipment class	Net present value (billion $2014)	
		7-percent discount rate	3-percent discount rate
2	Light Duty (≤5 ozf)	$0.015	$0.021
	Standard Duty (>5 ozf and ≤8 ozf)	0.800	1.168
	Heavy Duty (>8 ozf)	(0.544)	(0.793)
	TOTAL TSL 2	0.271	0.397

TABLE V.30—COMMERCIAL PRERINSE SPRAY VALVES: CUMULATIVE NET PRESENT VALUE OF CUSTOMER BENEFITS FOR EQUIPMENT SHIPPED IN 2019–2027 FOR TSL 3

TSL	Equipment class	Net present value (billion $2014)	
		7-percent discount rate	3-percent discount rate
3	Light Duty (≤5 ozf)	$0.023	$0.034
	Standard Duty (>5 ozf and ≤8 ozf)	0.800	1.168
	Heavy Duty (>8 ozf)	(0.511)	(0.746)
	TOTAL TSL 3	0.312	0.456

TABLE V.31—COMMERCIAL PRERINSE SPRAY VALVES: CUMULATIVE NET PRESENT VALUE OF CUSTOMER BENEFITS FOR EQUIPMENT SHIPPED IN 2019–2027 FOR TSL 4

TSL	Equipment class	Net present value (billion $2014)	
		7-percent discount rate	3-percent discount rate
4	Light Duty (≤5 ozf)	$0.023	$0.034
	Standard Duty (>5 ozf and ≤8 ozf)	1.509	2.203
	Heavy Duty (>8 ozf)	(1.411)	(2.059)
	TOTAL TSL 4	0.121	0.177

c. Impacts on Employment

DOE develops estimates of the indirect employment impacts of potential standards on the economy in general. As discussed previously, DOE expects energy conservation standards for commercial prerinse spray valves to reduce energy and water bills for product owners, and the resulting net savings to be redirected to other forms of economic activity. These expected shifts in spending and economic activity could affect the demand for labor. Thus, indirect employment impacts may result from expenditures shifting between goods (the substitution effect) and changes in income and overall expenditures (the income effect) that could occur due to amended energy conservation standards. As described in section IV.N of this notice, DOE used an input/output model of the U.S. economy to estimate indirect employment impacts of the TSLs that DOE considered in this rulemaking. DOE understands that there are uncertainties involved in projecting employment impacts, especially changes in the later years of the analysis. Therefore, DOE generated results for near-term timeframes (2020–2025), where these uncertainties are reduced.

The results suggest that the proposed amended standards are likely to have negligible impact on the net demand for labor in the economy. All TSLs increase net demand for labor by fewer than 500 jobs. The net change in jobs is so small that it would be imperceptible in national labor statistics, and it might be offset by other, unanticipated effects on employment. Chapter 16 of the NOPR TSD presents detailed results regarding indirect employment impacts. As shown in Table V.32, DOE estimates that net indirect employment impacts from a CPSV amended standard are small relative to the national economy.

TABLE V.32—NET SHORT-TERM CHANGE IN EMPLOYMENT (JOBS)

Trial standard level	2020	2025
1	16	45
2	95	266
3	109	306
4	43	119

4. Impact on Utility or Performance of Products

Based on testing conducted in support of this proposed rule, and discussed in section IV.C.1, DOE has tentatively concluded that the standards proposed in this NOPR would not reduce the utility or performance of the commercial prerinse spray valves under consideration in this rulemaking. Manufacturers of these products currently offer units that meet or exceed the proposed amended standards.

5. Impact of Any Lessening of Competition

DOE considers any lessening of competition that is likely to result from amended standards. The Attorney General determines the impact, if any, of any lessening of competition likely to result from a proposed standard, and transmits such determination to DOE, together with an analysis of the nature and extent of such impact. (42 U.S.C. 6295(o)(2)(B)(ii))

DOE will transmit a copy of this notice and the accompanying TSD to the Attorney General, requesting that the DOJ provide its determination on this issue. DOE will consider DOJ's comments on the proposed rule in preparing the final rule, and DOE will publish and respond to DOJ's comments in that document.

6. Need of the Nation To Conserve Energy

Enhanced energy efficiency, where economically justified, improves the nation's energy security, strengthens the economy, and reduces the environmental impacts of energy production. Reduced electricity demand due to energy conservation standards is also likely to reduce the cost of maintaining the reliability of the electricity system, particularly during peak-load periods. As a measure of this reduced demand, chapter 15 in the NOPR TSD presents the estimated reduction in generating capacity for the TSLs that DOE considered in this rulemaking.

Energy savings from amended standards for commercial prerinse spray valves could also produce environmental benefits in the form of reduced emissions of air pollutants and greenhouse gases associated with electricity production. Table V.33 provides DOE's estimate of cumulative emissions reductions to result from the TSLs considered in this rulemaking. DOE reports annual CO_2, NO_X, and Hg emissions reductions for each TSL in chapter 13 of the NOPR TSD.

TABLE V.33—CUMULATIVE EMISSIONS REDUCTION ESTIMATED FOR COMMERCIAL PRERINSE SPRAY VALVES TRIAL STANDARD LEVELS FOR PRODUCTS SHIPPED IN 2019–2048

	TSL			
	1	2	3	4
Power Sector and Site Emissions				
CO_2 (million metric tons)	0.78	4.58	5.27	2.05
NO_X (thousand tons)	0.85	4.99	5.73	2.23
Hg (tons)	0.0011	0.0064	0.0074	0.0029
N_2O (thousand tons)	0.0063	0.0371	0.0427	0.0166
CH_4 (thousand tons)	0.05	0.27	0.31	0.12
SO_2 (thousand tons)	0.36	2.09	2.40	0.93
Upstream Emissions				
CO_2 (million metric tons)	0.07	0.43	0.49	0.19
NO_X (thousand tons)	1.11	6.51	7.49	2.91
Hg (tons)	0.00001	0.0001	0.0001	0.0000
N_2O (thousand tons)	0.00	0.00	0.00	0.00
CH_4 (thousand tons)	6.92	40.55	46.63	18.15
SO_2 (thousand tons)	0.00	0.02	0.03	0.01
Total Emissions				
CO_2 (million metric tons)	0.85	5.01	5.76	2.24

TABLE V.33—CUMULATIVE EMISSIONS REDUCTION ESTIMATED FOR COMMERCIAL PRERINSE SPRAY VALVES TRIAL STANDARD LEVELS FOR PRODUCTS SHIPPED IN 2019–2048—Continued

	TSL			
	1	2	3	4
NO_X (thousand tons)	1.96	11.50	13.22	5.15
Hg (tons)	0.0011	0.0065	0.0074	0.0029
N_2O (thousand tons)	0.0066	0.0388	0.0446	0.0174
N_2O (thousand tons CO_2eq)	1.75	10.28	11.82	4.60
CH_4 (thousand tons)	6.97	40.83	46.94	18.27
CH_4 (thousand tons CO_2eq))	195.09	1143.16	1314.46	511.51
SO_2 (thousand tons)	0.36	2.11	2.43	0.94

* CO_2eq is the quantity of CO_2 that would have the same GWP.

As part of the analysis for this proposed rule, DOE estimated monetary benefits likely to result from the reduced emissions of CO_2 and NO_X that DOE estimated for each of the TSLs considered for commercial prerinse spray valves. As discussed in section IV.L of this notice, for CO_2, DOE used the most recent values for the SCC developed by an interagency process. The four sets of SCC values for CO_2 emissions reductions in 2015 resulting from that process (expressed in 2014$) are represented by $12.2 per metric ton (the average value from a distribution that uses a 5-percent discount rate), $41.1 per metric ton (the average value from a distribution that uses a 3-percent discount rate), $63.3 per metric ton (the average value from a distribution that uses a 2.5-percent discount rate), and $121 per metric ton (the 95th-percentile value from a distribution that uses a 3-percent discount rate). The values for later years are higher due to increasing damages (emissions-related costs) as the projected magnitude of climate change increases.

Table V.34 presents the global value of CO_2 emissions reductions at each TSL. For each of the four cases, DOE calculated a present value of the stream of annual values using the same discount rate as was used in the studies upon which the dollar-per-ton values are based. DOE calculated domestic values as a range from 7 percent to 23 percent of the global values, and these results are presented in chapter 14 of the NOPR TSD.

TABLE V.34—ESTIMATES OF GLOBAL PRESENT VALUE OF CO_2 EMISSIONS REDUCTION FOR COMMERCIAL PRERINSE SPRAY VALVE TRIAL STANDARD LEVELS

TSL	SCC Case * (million 2014$)			
	5% discount rate, average *	3% discount rate, average *	2.5% discount rate, average *	3% discount rate, 95th percentile *
Primary Energy Emissions				
1	6.0	26.7	42.0	82.4
2	35.2	156.3	246.2	482.9
3	40.5	179.7	283.1	555.2
4	15.8	69.9	110.2	216.1
Upstream Emissions				
1	0.6	2.5	3.9	7.6
2	3.2	14.4	22.7	44.6
3	3.7	16.6	26.1	51.3
4	1.4	6.5	10.2	20.0
Total Emissions				
1	6.6	29.1	45.9	90.0
2	38.5	170.7	268.9	527.5
3	44.2	196.3	309.2	606.5
4	17.2	76.4	120.3	236.0

* For each of the four cases, the corresponding SCC value for emissions in 2015 is $12.2, $41.1, $63.3, and $121 per metric ton (2014$).

DOE is well aware that scientific and economic knowledge regarding the contribution of CO_2 and other GHG emissions to changes in the future global climate as well as the potential resulting damages to the world economy continues to evolve rapidly. Thus, any value placed on reducing CO_2 emissions in this rulemaking is subject to change. DOE, together with other Federal agencies, will continue to review various methodologies for estimating the monetary value of reductions in CO_2 and other GHG emissions. This ongoing review will consider the comments on this subject that are part of the public record for this and other rulemakings, as well as other methodological assumptions and issues. However, consistent with DOE's legal obligations, and taking into account the uncertainty involved with this particular issue, DOE has included in this proposed rule the most recent values and analyses resulting from the interagency process.

DOE also estimated the cumulative monetary value of the economic benefits associated with NO_X emissions reductions anticipated to result from amended standards for commercial prerinse spray valves. The dollar-per-ton values that DOE used are discussed in section IV.L of this notice. Table V.35 presents the cumulative present values for each TSL calculated using 7-percent and 3-percent discount rates.

TABLE V.35—ESTIMATES OF PRESENT VALUE OF NO_X EMISSIONS REDUCTION UNDER COMMERCIAL PRERINSE SPRAY VALVES TRIAL STANDARD LEVELS

[Million 2014$]

TSL	3% discount rate	7% discount rate
Power Sector Emissions		
1	1.3	0.7
2	7.6	3.9
3	8.7	4.5
4	3.4	1.8
Upstream Emissions		
1	1.7	0.8
2	9.7	4.9
3	11.1	5.6
4	4.3	2.2
Total Emissions		
1	2.9	1.5
2	17.2	8.8
3	19.8	10.1
4	7.7	3.9

7. Summary of National Economic Impacts

The NPV of the monetized benefits associated with emissions reductions can be viewed as a complement to the NPV of the consumer savings calculated for each TSL considered in this rulemaking. Table V.36 presents the NPV values that result from adding the estimates of the potential economic benefits resulting from reduced CO_2 and NO_X emissions in each of four valuation scenarios to the NPV of consumer savings calculated for each TSL considered in this rulemaking, at both a 7-percent and a 3-percent discount rate. The CO_2 values used in the columns of each table correspond to the four sets of SCC values discussed in section V.B.6.

TABLE V.36—PRESENT VALUE OF CONSUMER SAVINGS COMBINED WITH PRESENT VALUE OF MONETIZED BENEFITS FROM CO_2 AND NO_X EMISSIONS REDUCTIONS

TSL	Billion 2014$			
	SCC value of $12.2/metric ton CO_2* and medium value for NO_X**	SCC value of $41.1/metric ton CO_2* and medium value for NO_X**	SCC value of $63.3/metric ton CO_2* and medium value for NO_X**	SCC value of $121/metric ton CO_2* and medium value for NO_X**
Consumer NPV at 3% Discount Rate added with:				
1	0.226	0.249	0.265	0.309
2	1.324	1.457	1.555	1.813
3	1.523	1.675	1.788	2.085
4	0.593	0.652	0.696	0.811
Consumer NPV at 7% Discount Rate added with:				
1	0.113	0.136	0.152	0.197
2	0.663	0.795	0.894	1.152
3	0.762	0.914	1.027	1.325
4	0.297	0.356	0.400	0.515

* For each of the four cases, the corresponding SCC value for emissions in 2015 is $12.2, $41.1, $63.3, and $121 per metric ton (2014$).
** The medium value for NO_X is $2,723 per short ton (2014$).

Although adding the value of consumer savings to the values of emission reductions provides a valuable perspective, two issues should be considered. First, the national operating cost savings are domestic U.S. consumer monetary savings that occur as a result of market transactions, while the value of CO_2 reductions is based on a global value. Second, the assessments of operating cost savings and the SCC are performed with different methods that use different time frames for analysis. The national operating cost savings is measured for the lifetime of products shipped in 2019 to 2048. Because CO_2 emissions have a very long residence time in the atmosphere,[55] the SCC values in future years reflect future climate-related impacts resulting from the emission of CO_2 that continue beyond 2100.

8. Other Factors

The Secretary of Energy, in determining whether a standard is economically justified, may consider any other factors that the Secretary deems to be relevant. (42 U.S.C. 6295(o)(2)(B)(i)(VI)) DOE did not consider any other factors in this analysis.

C. Conclusion

When considering proposed standards, the new or amended energy conservation standard that DOE adopts for any type (or class) of covered products must be designed to achieve the maximum improvement in energy efficiency that the Secretary determines is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A)) In determining whether a standard is economically justified, the Secretary must determine whether the benefits of the standard exceed its burdens, considering to the greatest extent practicable the seven statutory factors discussed previously. (42 U.S.C. 6295(o)(2)(B)(i)) The new or amended standard must also result in a significant conservation of energy. (42 U.S.C. 6295(o)(3)(B))

DOE considered the impacts of standards at each TSL, beginning with a maximum technologically feasible level, to determine whether that level was economically justified. Where the max-tech level was not justified, DOE then considered the next most efficient level and undertook the same evaluation until it reached the highest efficiency level that is both technologically feasible and economically justified and saves a significant amount of energy.

To aid the reader as DOE discusses the benefits and/or burdens of each trial standard level, Table V.37 and Table V.38 present a summary of the results of DOE's quantitative analysis for each TSL. In addition to the quantitative results presented in the tables, DOE also considers other burdens and benefits that affect economic justification. Those include the impacts on identifiable subgroups of consumers that may be disproportionately affected by a national standard and impacts on employment. Section V.B.1.b presents the estimated impacts of each TSL for these subgroups. DOE discusses the impacts on direct employment in CPSV manufacturing in section IV.J.4, and discusses the indirect employment impacts in section IV.N.

1. Benefits and Burdens of TSLs Considered for Commercial Prerinse Spray Valves

Table V.37 and Table V.38 summarize the quantitative impacts estimated for each TSL for commercial prerinse spray valves. The efficiency levels contained in each TSL are described in section V.A of this notice.

TABLE V.37—SUMMARY OF RESULTS FOR COMMERCIAL PRERINSE SPRAY VALVE TRIAL STANDARD LEVELS: NATIONAL IMPACTS

Category	TSL 1	TSL 2	TSL 3	TSL 4
Cumulative FFC Energy Savings (quads)				
	0.01	0.09	0.10	0.04
Cumulative Water Savings (billion gal)				
	17.84	104.52	120.18	46.77
NPV of Consumer Benefits (2014$ billion)				
3% discount rate	0.22	1.27	1.46	0.57
7% discount rate	0.11	0.62	0.71	0.28
Cumulative FFC Emissions Reduction				
CO_2 (million metric tons)	0.85	5.01	5.76	2.24
NO_X (thousand tons)	1.96	11.50	13.22	5.15
Hg (tons)	0.0011	0.0065	0.0074	0.0029
N_2O (thousand tons)	0.0066	0.0388	0.0446	0.0174
N_2O (thousand tons CO_2eq*)	1.75	10.28	11.82	4.60
CH_4 (thousand tons)	6.97	40.83	46.94	18.27
CH_4 (thousand tons CO_2eq*)	195.09	1143.16	1314.46	511.51
SO_2 (thousand tons)	0.36	2.11	2.43	0.94
Value of Emissions Reduction				
CO_2 (2014$ million)**	6.6 to 90.0	38.5 to 527.5	44.2 to 606.5	17.2 to 236.0
NO_X − 3% discount rate (2014$ million)	2.94	17.25	19.83	7.72
NO_X − 7% discount rate (2014$ million)	1.50	8.82	10.14	3.95

* CO_2eq is the quantity of CO_2 that would have the same GWP.
** Range of the economic value of CO_2 reductions is based on estimates of the global benefit of reduced CO_2 emissions.

[55] The atmospheric lifetime of CO_2 is estimated of the order of 30–95 years. Jacobson, MZ, ''Correction to 'Control of fossil-fuel particulate black carbon and organic matter, possibly the most effective method of slowing global warming,' '' *J. Geophys. Res.* 110. pp. D14105 (2005).

TABLE V.38—SUMMARY OF RESULTS FOR COMMERCIAL PRERINSE SPRAY VALVE TRIAL STANDARD LEVELS: CONSUMER AND MANUFACTURER IMPACTS

Category	TSL 1	TSL 2 *	TSL 3 *	TSL 4 *
Manufacturer Impacts				
Industry NPV Relative to a No-Standards Case Value of 9.1 (2014$ million, 6.9% discount rate)	7.7 to 8.5	7.2 to 8.1	7.1 to 8.0	7.1 to 8.0
Industry NPV (% change)	(15.0) to (7.0)	(21.0) to (11.5)	(21.6) to (12.1)	(21.6) to (12.1)
Direct Employment Impacts				
Potential Increase in Domestic Production Workers in 2019	0	0	0	0
Consumer Average LCC Savings (2014$)				
Light Duty (≤5 ozf)	16	68	107	107
Standard Duty (>5 and ≤8 ozf)	125	429	429	499
Heavy Duty (>8 ozf)	166	541	640	640
Consumer Simple PBP (years)				
Light Duty (≤5 ozf)	0.0	0.0	0.0	0.0
Standard Duty (>5 and ≤8 ozf)	0.0	0.0	0.0	0.0
Heavy Duty (>8 ozf)	0.0	0.0	0.0	0.0
Distribution of Consumer LCC Impacts				
Light Duty (≤5 ozf)				
Net Cost (%)	0%	0%	0%	0%
Standard Duty (>5 and ≤8 ozf)				
Net Cost (%)	0%	0%	0%	0%
Heavy Duty (>8 ozf)				
Net Cost (%)	0%	0%	0%	0%

* Parentheses indicate negative (−) values. The entry "n.a." means not applicable because there is no change in the standard at certain TSLs.

DOE first considered TSL 4, which represents the max-tech efficiency levels. TSL 4 would save 0.04 quads of energy and 46.77 billion gallons of water. Under TSL 4, the NPV of consumer benefit would be $0.28 billion using a discount rate of 7 percent, and $0.57 billion using a discount rate of 3 percent.

The cumulative emissions reductions at TSL 4 are 2.24 Mt of CO_2, 5.15 thousand tons of NO_X, 0.94 thousand tons of SO_2, 0.003 tons of Hg, 0.02 thousand tons of N_2O, and 18.27 thousand tons of CH_4. The estimated monetary value of the CO_2 emissions reductions at TSL 4 ranges from $17 million to $236 million.

At TSL 4, the average LCC impact is a savings of $107 for light duty CPSV models, $499 for standard duty models, and $640 for heavy duty models. The simple payback period is 0.0 years for all CPSV models. The fraction of consumers experiencing an LCC net cost is 0 percent for all CPSV models.

At TSL 4, the projected change in INPV ranges from a decrease of $2.0 million to a decrease of $1.1 million. If the lower bound of the range of impacts is reached, TSL 4 could result in a net loss of up to 21.6 percent in INPV for manufacturers.

Although TSL 4 for commercial prerinse spray valves provides positive LCC savings, and a positive total NPV of consumer benefits, TSL 3 provides for greater energy savings at a similar burden to the industry. Consequently, DOE has tentatively concluded that TSL 4 does not provide the maximum reduction in energy use that is technologically feasible. (42 U.S.C. 6295(p)(1)

Next DOE considered TSL 3, which saves an estimated total of 0.10 quads of energy, and 120.18 billion gallons of water. TSL 3 has an estimated NPV of consumer benefit of $0.71 billion using a 7-percent discount rate, and $1.46 billion using a 3-percent discount rate. TSL 3 provides the maximum total NPV, energy savings, and water savings.

The cumulative emissions reductions at TSL 3 are 5.76 Mt of CO_2, 13.22 thousand tons of NO_X, 2.43 thousand tons of SO_2, 0.007 tons of Hg, and 46.94 thousand tons of CH_4. The estimated monetary value of the CO_2 emissions reductions at TSL 3 ranges from $44 million to $606 million.

At TSL 3, the average LCC impact is a savings of $107 for light duty CPSV models, $429 for standard duty models, and $640 for heavy duty models. The simple payback period is 0.0 years for all CPSV models. The fraction of consumers experiencing an LCC net cost is 0 percent for all CPSV models.

At TSL 3, the projected change in INPV ranges from a decrease of $2.0 million to a decrease of $1.1 million. If the lower bound of the range of impacts is reached, TSL 3 could result in a net loss of up to 21.6 percent in INPV for manufacturers.

DOE tentatively concludes that at TSL 3 for commercial prerinse spray valves, the benefits of energy savings, water savings, positive NPV of consumer benefits, emission reductions, and the estimated monetary value of the CO_2 emissions reductions would outweigh the negative impacts on manufacturers, including the conversion costs that could result in a reduction in INPV for manufacturers.

After considering the analysis and the benefits and burdens of TSL 3, DOE tentatively concludes that this TSL will offer the maximum improvement in efficiency that is technologically feasible and economically justified, and will result in the significant conservation of energy and water. Therefore, DOE proposes TSL 3 for commercial prerinse spray valves. The proposed amended energy conservation standards for commercial prerinse spray valves, which are a maximum water flow rate, are shown in Table V.39.

TABLE V.39—PROPOSED AMENDED ENERGY CONSERVATION STANDARDS FOR COMMERCIAL PRERINSE SPRAY VALVES

Product class	Compliance date: Month Day, 2018
	Maximum water flow rate (gpm)
Light Duty (≤5 ozf)	0.65
Standard Duty (>5 ozf and ≤8 ozf)	0.97
Heavy Duty (>8 ozf)	1.24

2. Summary of Benefits and Costs (Annualized) of the Standards

The benefits and costs of the proposed standards can also be expressed in terms of annualized values. The annualized monetary values are the sum of (1) the annualized national economic value, expressed in 2014$, of the benefits from operating products that meets the proposed standards (consisting primarily of operating cost savings from using less energy and water, minus increases in product purchase costs, which is another way of representing consumer NPV), and (2) the monetary value of the benefits of emission reductions, including CO_2 emission reductions.[56] The value of the CO_2 reductions, otherwise known as the SCC, is calculated using a range of values per metric ton of CO_2 developed by a recent interagency process.

Although combining the values of operating savings and CO_2 reductions provides a useful perspective, two issues should be considered. First, the national operating savings are domestic U.S. consumer monetary savings that occur as a result of market transactions, while the value of CO_2 reductions is based on a global value. Second, the assessments of operating cost savings and SCC are performed with different methods that use different time frames for analysis. The national operating cost savings is measured for the lifetime of products shipped in 2019–2048. The SCC values, on the other hand, reflect the present value of all future climate-related impacts resulting from the emission of 1 ton of carbon dioxide in each year. These impacts continue well beyond 2100.

Table V.40 shows the annualized values for commercial prerinse spray valves under TSL 3, expressed in 2014$. The results under the primary estimate are as follows. Using a 7-percent discount rate for benefits and costs other than CO_2 reductions, for which DOE used a 3-percent discount rate along with the SCC series corresponding to a value of $41.1 per metric ton in 2015 (in 2014$), there are no increased product costs associated with the standards in the proposed rule, while the annualized benefits are $70.65 million per year in reduced product operating costs, $10.94 million in CO_2 reductions, and $1.00 million in reduced NO_X emissions. In this case, the net benefit amounts to $82.59 million per year. Using a 3-percent discount rate for all benefits and costs, and the SCC series corresponding to a value of $41.1 per metric ton in 2015 (in 2014$), there are no increased product costs associated with the standards in this proposed rule, while the benefits are $82.20 million per year in reduced operating costs, $10.94 million in CO_2 reductions, and $1.11 million in reduced NO_X emissions. In this case, the net benefit amounts to $94.25 million per year.

TABLE V.40—ANNUALIZED BENEFITS AND COSTS OF PROPOSED AMENDED STANDARDS (TSL 3) FOR COMMERCIAL PRERINSE SPRAY VALVES SOLD IN 2019–2048

	Discount rate	Million 2014$/year		
		Primary estimate *	Low net benefits estimate *	High net benefits estimate *
Benefits				
Consumer Operating Cost Savings	7%	69.90	65.90	72.70.
	3%	81.32	75.92	85.10.
CO_2 Reduction at $12.0/t **	5%	3.33	3.33	3.33.
CO_2 Reduction at $40.5/t **	3%	10.94	10.94	10.94.
CO_2 Reduction at $62.4/t **	2.5%	15.91	15.91	15.91.
CO_2 Reduction at $119/t **	3%	33.81	33.81	33.81.
NO_X Reduction at $2,723/ton	7%	1.00	1.00	1.00.
	3%	1.11	1.11	1.11.
Total †	7% plus CO_2 range	74 to 105	70 to 101	77 to 108.
	7%	81.85	77.84	84.64.
	3% plus CO_2 range	86 to 116	80 to 111	90 to 120.
	3%	93.37	87.96	97.15.
Costs				
Manufacturer Conversion Costs †	7%	0.16 to 0.24	0.16 to 0.24	0.16 to 0.24.
	3%	0.10 to 0.15	0.10 to 0.15	0.10 to 0.15.
Total Net Benefits				
Total ‡	7% plus CO_2 range	74 to 105	70 to 101	77 to 108.
	7%	81.85	77.84	84.64.
	3% plus CO_2 range	86 to 116	80 to 111	90 to 120.

[56] To convert the time-series of costs and benefits into annualized values, DOE calculated a present value in 2014, the year used for discounting the NPV of total customer costs and savings. For the benefits, DOE calculated a present value associated with each year's shipments in the year in which the shipments occur (2020, 2030, *etc.*), and then discounted the present value from each year to 2014. The calculation uses discount rates of 3 and 7 percent for all costs and benefits except for the value of CO_2 reductions, for which DOE used case-specific discount rates, as shown in Table V.40. Using the present value, DOE then calculated the fixed annual payment over a 30-year period, starting in the compliance year, which yields the same present value.

TABLE V.40—ANNUALIZED BENEFITS AND COSTS OF PROPOSED AMENDED STANDARDS (TSL 3) FOR COMMERCIAL PRERINSE SPRAY VALVES SOLD IN 2019–2048—Continued

	Discount rate	Million 2014$/year		
		Primary estimate *	Low net benefits estimate *	High net benefits estimate *
	3%	93.37	87.96	97.15.

* The results include benefits to consumers which accrue after 2048 from the commercial prerinse spray valves purchased from 2019 through 2048. Costs incurred by manufacturers, some of which may be incurred in preparation for the rule, are not directly included, but are indirectly included as part of incremental product costs. The extent of the costs and benefits will depend on the projected CPSV price trends, as the consumer demand for products is a function of CPSV prices. The Primary, Low Benefits, and High Benefits Estimates utilize forecasts of energy prices and building starts from the *AEO2014* Reference case, Low Estimate, and High Estimate, respectively.

** The CO_2 values represent global values (in 2014$) of the social cost of CO_2 emissions in 2015 under several scenarios. The values of $12.2, $41.1, and $63.3 per metric ton are the averages of SCC distributions calculated using 5 percent, 3 percent, and 2.5 percent discount rates, respectively. The value of $121 per ton represents the 95th percentile of the SCC distribution calculated using a 3 percent discount rate.

† The lower value of the range represents costs associated with the Sourced Components conversion cost scenario. The upper value represents costs for the Fabricated Components scenario.

‡ Total Benefits for both the 3 percent and 7 percent cases are derived using the SCC value calculated at a 3 percent discount rate, which is $41.1 per metric ton in 2015 (in 2014$). In the rows labeled as "7% plus CO_2 range" and "3% plus CO_2 range," the operating cost and NO_X benefits are calculated using the labeled discount rate, and those values are added to the full range of CO_2 values. Manufacturer Conversion Costs are not included in the Net Benefits calculations.

VI. Procedural Issues and Regulatory Review

A. Review Under Executive Orders 12866 and 13563

Section 1(b)(1) of Executive Order 12866, ''Regulatory Planning and Review,'' requires each agency to identify the problem that it intends to address, including, where applicable, the failures of private markets or public institutions that warrant new agency action, as well as to assess the significance of that problem. 58 FR 51735 (Oct. 4, 1993). The problems that the proposed standards address are as follows.

(1) Insufficient information and the high costs of gathering and analyzing relevant information leads some consumers to miss opportunities to make cost-effective investments in energy efficiency.

(2) In some cases, the benefits of more efficient products are not realized because of misaligned incentives between purchasers and users. An example of such a case is when the product purchase decision is made by a building contractor or building owner who does not pay the energy costs.

(3) There are external benefits resulting from improved energy efficiency of commercial prerinse spray valves that are not captured by the users of such products. These benefits include externalities related to public health, environmental protection, and national security that are not reflected in energy prices, such as reduced emissions of air pollutants and greenhouse gases that impact human health and global warming. DOE attempts to quantify some of the external benefits through use of social cost of carbon values.

In addition, DOE has determined that the proposed regulatory action is a ''significant regulatory action'' under section (3)(f)(1) of Executive Order 12866. Accordingly, section 6(a)(3) of the Executive Order requires that DOE prepare a regulatory impact analysis (RIA) on this rule and that the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget (OMB) review this rule. DOE presented to OIRA for review the draft rule and other documents prepared for this rulemaking, including the RIA, and has included these documents in the rulemaking record. The assessments prepared pursuant to Executive Order 12866 can be found in the technical support document for this rulemaking.

DOE has also reviewed this regulation pursuant to Executive Order 13563, issued on January 18, 2011. 76 FR 3281 (Jan. 21, 2011). Executive Order 13563 is supplemental to and explicitly reaffirms the principles, structures, and definitions governing regulatory review established in Executive Order 12866. To the extent permitted by law, agencies are required by Executive Order 13563 to: (1) Propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (recognizing that some benefits and costs are difficult to quantify); (2) tailor regulations to impose the least burden on society, consistent with obtaining regulatory objectives, taking into account, among other things, and to the extent practicable, the costs of cumulative regulations; (3) select, in choosing among alternative regulatory approaches, those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity); (4) to the extent feasible, specify performance objectives, rather than specifying the behavior or manner of compliance that regulated entities must adopt; and (5) identify and assess available alternatives to direct regulation, including providing economic incentives to encourage the desired behavior, such as user fees or marketable permits, or providing information upon which choices can be made by the public.

DOE emphasizes as well that Executive Order 13563 requires agencies to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible. In its guidance, OIRA has emphasized that such techniques may include identifying changing future compliance costs that might result from technological innovation or anticipated behavioral changes. For the reasons stated in the preamble, DOE believes that this NOPR is consistent with these principles, including the requirement that, to the extent permitted by law, benefits justify costs and that net benefits are maximized.

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 (IRFA) 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 (Aug. 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 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*).

1. Description and Estimated Number of Small Entities Regulated

For manufacturers of commercial prerinse spray valves, the Small Business Administration (SBA) has set a size threshold, which defines those entities classified as ''small businesses'' for the purposes of the statute. DOE used the SBA's small business size standards to determine whether any small entities would be subject to the requirements of the rule. 65 FR 30836, 30848 (May 15, 2000), as amended at 65 FR 53533, 53544 (Sept. 5, 2000) and codified at 13 CFR part 121. The size standards are listed by North American Industry Classification System (NAICS) code and industry description, and are available at *www.sba.gov/sites/default/files/files/Size_Standards_Table.pdf*. Commercial prerinse spray valves manufacturing is classified under NAICS 332919, ''Other metal valve and pipe fitting manufacturing.'' The SBA sets a threshold of 500 employees or less for an entity to be considered as a small business for this category.

To estimate the number of small businesses that could be impacted by the amended energy conservation standards, DOE conducted a market survey using public information to identify potential small manufacturers. DOE reviewed the DOE's Compliance Certification Management System (CCMS), EPA's WaterSense program database, individual company Web sites, and various marketing research tools (*e.g.,* Hoovers reports) to create a list of companies that import, assemble, or otherwise manufacture commercial prerinse spray valves covered by this rulemaking. DOE screened out companies that do not offer products covered by this rulemaking, do not meet the definition of a ''small business,'' or are foreign-owned and operated.

DOE identified 11 commercial spray valve manufacturers selling commercial prerinse spray valves in the United States, 8 of which are small businesses. DOE contacted all identified commercial prerinse spray valve manufacturers for interviews. Ultimately, no manufacturers agreed to participate in an interview.

2. Description and Estimate of Compliance Requirements

The eight small domestic commercial spray valve manufacturers account for approximately 83 percent of commercial spray valve basic models currently on the market. The remaining 17 percent of commercial spray valve spray basic models currently on the market are offered by three large manufacturers.

Using basic model counts, DOE estimated the distribution of industry conversion costs between small manufacturers and large manufacturers. Using its count of manufacturers, DOE calculated capital conversion costs (under both capital conversion costs scenarios, Table VI.1) and product conversion costs (Table VI.2) for an average small manufacturer versus an average large manufacturer. To provide context on the size of the conversion costs relative to the size of the businesses, DOE presents the conversion costs relative to annual revenue and annual operating profit under the proposed standard level for the two capital conversion cost scenarios considered in the MIA, as shown in Table VI.3 and Table VI.4. The current annual revenue and annual operating profit estimates are derived from the GRIM's industry revenue calculations and the market share breakdowns of small versus large manufacturers. Due to the lack of direct market share data for individual manufacturers, DOE used basic model counts as a percent of total basic models currently available on the market as a proxy for market share.

TABLE VI.1—COMPARISON OF TYPICAL SMALL AND LARGE MANUFACTURER'S CAPITAL CONVERSION COSTS *

Trial standard level	Sourced components capital conversion costs scenario		Fabricated components capital conversion costs scenario	
	Capital conversion costs for typical small manufacturer (2014$ millions)	Capital conversion costs for typical large manufacturer (2014$ millions)	Capital conversion costs for typical small manufacturer (2014$ millions)	Capital conversion costs for typical large manufacturer (2014$ millions)
TSL 1	$0.00	$0.00	$0.09	$0.06
TSL 2	0.01	0.01	0.11	0.08
TSL 3	0.01	0.01	0.11	0.08
TSL 4	0.01	0.01	0.11	0.08

* Capital conversion costs are the capital investments made during the 3-year period between the publication of the final rule and the analysis compliance year of the proposed standard.

TABLE VI.2—COMPARISON OF TYPICAL SMALL AND LARGE MANUFACTURER'S PRODUCT CONVERSION COSTS *

Trial standard level	Product conversion costs for typical small manufacturer (2014$ millions)	Product conversion costs for typical large manufacturer (2014$ millions)
TSL 1	$0.12	$0.06
TSL 2	0.18	0.09
TSL 3	0.19	0.10
TSL 4	0.19	0.10

* Product conversion costs are the R&D and other product development investments made during the 3-year period between the publication of the final rule and the analysis compliance year of the proposed standard.

TABLE VI.3—COMPARISON OF CONVERSION COSTS FOR AN AVERAGE SMALL AND AN AVERAGE LARGE MANUFACTURER AT TSL 3—SOURCED COMPONENTS CAPITAL CONVERSION COSTS SCENARIO

	Capital conversion cost (2014$ millions)	Product conversion cost (2014$ millions)	Conversion costs/ conversion period revenue * (percent)	Conversion costs/ conversion period operating profit * (percent)
Small Manufacturer	$0.01	$0.19	9	81
Large Manufacturer	0.01	0.10	8	79

* The conversion period, the time between the final rule publication year and the analysis compliance year for this rulemaking, is 3 years.

TABLE VI.4—COMPARISON OF CONVERSION COSTS FOR AN AVERAGE SMALL AND AN AVERAGE LARGE MANUFACTURER AT TSL 3—FABRICATED COMPONENTS CAPITAL CONVERSION COSTS SCENARIO

	Capital conversion cost (2014$ millions)	Product conversion cost (2014$ millions)	Conversion costs/ conversion period revenue * (percent)	Conversion costs/ conversion period operating profit * (percent)
Small Manufacturer	$0.11	$0.19	13	120
Large Manufacturer	0.08	0.10	14	129

* The conversion period, the time between the final rule publication year and the analysis compliance year for this rulemaking, is 3 years.

At the proposed level, depending on the capital conversion cost scenario, DOE estimates total conversion costs for an average small manufacturer to range from $20,000 to $30,000 for the Sourced Components Capital Conversion Costs scenario and the Fabricated Components Capital Conversion Costs scenario, respectively. This suggests that an average small manufacturer would need to reinvest roughly 81 percent to 120 percent of its operating profit per year over the conversion period to comply with standards. Depending on the capital conversion cost scenario, the total conversion costs for an average large manufacturer range from $11,000 to $18,000 for the Sourced Components Capital Conversion Costs scenario and the Fabricated Components Capital Conversion Costs scenario, respectively. This suggests that an average large manufacturer would need to reinvest roughly 79 percent to 129 percent of its commercial prerinse spray valve-related operating profit per year over the 3-year conversion period.

As noted earlier, because of a lack of data pertaining to true market shares of individual manufacturers, DOE requests additional information and data regarding the number and market share of domestic small manufacturers of commercial prerinse spray valves, as well as small business impacts related to the proposed energy conservation standards. DOE will consider any such additional information when formulating and selecting TSLs for the final rule (section VII.E. of this notice).

3. Duplication, Overlap, and Conflict With Other Rules and Regulations

DOE is not aware of any rules or regulations that duplicate, overlap, or conflict with the rule being proposed today.

4. Significant Alternatives to the Rule

The previous discussion analyzes impacts on small businesses that would result from DOE's proposed rule. In addition to the other TSLs being considered, a regulatory impact analysis (RIA) can be found in the NOPR TSD chapter 17. For commercial prerinse spray valves, the RIA discusses the following policy alternatives: (1) No change in standard, (2) consumer rebates, (3) consumer tax credits, (4) voluntary energy efficiency targets, and (5) bulk government purchases. Although these alternatives may mitigate, to some extent, the economic impacts on small entities compared to the standards, DOE determined that the energy savings of these alternatives are significantly smaller than those that would be expected to result from adoption of the proposed standard levels. Accordingly, DOE is declining to adopt any of these alternatives and is proposing the standards set forth in this rulemaking. See chapter 17 of the NOPR TSD for further detail on the policy alternatives DOE considered.

Additional compliance flexibilities may be available through other means. For example, individual manufacturers may petition for a waiver of the applicable test procedure. Further, EPCA provides that a manufacturer whose annual gross revenue from all of its operations does not exceed $8,000,000 may apply for an exemption from all or part of an energy conservation standard for a period not longer than 24 months after the compliance date of a final rule establishing the standard. (42 U.S.C. 6295(t)) Additionally, Section 504 of the Department of Energy Organization Act, 42 U.S.C. 7194, provides authority for the Secretary to adjust a rule issued under EPCA in order to prevent ''special hardship, inequity, or unfair distribution of burdens'' that may be imposed on that manufacturer as a result of such rule. Manufacturers should refer to 10 CFR part 430, subpart E, and part 1003 for additional details.

C. Review Under the Paperwork Reduction Act

Manufacturers of commercial prerinse spray valves 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 commercial prerinse spray valves, 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 products, including commercial prerinse spray valves. 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 30 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

Pursuant to the National Environmental Policy Act (NEPA) of 1969, DOE has determined that the proposed rule fits within the category of actions included in Categorical Exclusion (CX) B5.1 and otherwise meets the requirements for application of a CX. See 10 CFR part 1021, appendix B, B5.1(b); 1021.410(b) and appendix B, B(1)–(5). The proposed rule fits within the category of actions because it is a rulemaking that establishes energy conservation standards for consumer products or industrial product, and for which none of the exceptions identified in CX B5.1(b) apply. Therefore, DOE has made a CX determination for this rulemaking, and DOE does not need to prepare an Environmental Assessment or Environmental Impact Statement for this proposed rule. DOE's CX determination for this proposed rule is available at *http://cxnepa.energy.gov/*.

E. Review Under Executive Order 13132

Executive Order 13132, ''Federalism,'' imposes certain requirements on Federal agencies formulating and implementing policies or regulations that preempt State law or that have Federalism implications. 64 FR 43255 (Aug. 10, 1999). 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 tentatively 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) No further action is required by Executive Order 13132.

F. Review Under Executive Order 12988

With respect to the review of existing regulations and the promulgation of new regulations, section 3(a) of Executive Order 12988, ''Civil Justice Reform,'' 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. 61 FR 4729 (Feb. 7, 1996). 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 section 3(a) and section 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, this 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. DOE's policy statement is also available at *http://energy.gov/sites/prod/files/gcprod/documents/umra_97.pdf*.

Section 202 of UMRA authorizes a Federal agency to respond to the content requirements of UMRA in any other statement or analysis that accompanies the proposed rule. (2 U.S.C. 1532(c)) The content requirements of section 202(b) of UMRA relevant to a private sector mandate substantially overlap the economic analysis requirements that apply under section 325(o) of EPCA and Executive Order 12866. The **SUPPLEMENTARY INFORMATION** section of this document and TSD chapter 17, the ''Regulatory Impact Analysis,'' for this proposed rule respond to those requirements.

Under section 205 of UMRA, the Department is obligated to identify and consider a reasonable number of regulatory alternatives before promulgating a rule for which a written statement under section 202 is required. (2 U.S.C. 1535(a)) DOE is required to select from those alternatives the most cost-effective and least burdensome alternative that achieves the objectives of the proposed rule unless DOE publishes an explanation for doing otherwise, or the selection of such an alternative is inconsistent with law. As required by 42 U.S.C. 6295(o) and (dd), this proposed rule would amend energy conservation standards for commercial prerinse spray valves that are designed to achieve the maximum improvement in energy efficiency that DOE has determined to be both technologically feasible and economically justified. A full discussion of the alternatives considered by DOE is presented in the ''Regulatory Impact Analysis'', chapter 17 of the TSD for this proposed rule.

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

Pursuant to Executive Order 12630, ''Governmental Actions and Interference with Constitutionally Protected Property Rights,'' 53 FR 8859 (March 15, 1988), DOE has determined that this proposed rule 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 of 2001 (44 U.S.C. 3516, note) provides for Federal agencies to review most disseminations of information to the public under information quality 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 NOPR 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 OIRA at 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 promulgates 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.

DOE has tentatively concluded that this regulatory action, which sets forth energy conservation standards for commercial prerinse spray valves, is not a significant energy action because the proposed standards are not likely to have a significant adverse effect on the supply, distribution, or use of energy, nor has it been designated as such by the Administrator at OIRA. Accordingly, DOE has not prepared a Statement of Energy Effects on the proposed rule.

L. Review Under the Information Quality Bulletin for Peer Review

On December 16, 2004, OMB, in consultation with the Office of Science and Technology Policy (OSTP), issued its Final Information Quality Bulletin for Peer Review (the Bulletin). 70 FR 2664 (Jan. 14, 2005). The Bulletin establishes that certain scientific information shall be peer reviewed by qualified specialists before it is disseminated by the Federal Government, including influential scientific information related to agency regulatory actions. The purpose of the bulletin is to enhance the quality and credibility of the Government's scientific information. Under the Bulletin, the energy conservation standards rulemaking analyses are ''influential scientific information,'' which the Bulletin defines as ''scientific information the agency reasonably can determine will have, or does have, a clear and substantial impact on important public policies or private sector decisions.'' *Id.* at 2667.

In response to OMB's Bulletin, DOE conducted formal in-progress peer reviews of the energy conservation standards development process and analyses and has prepared a Peer Review Report pertaining to the energy conservation standards rulemaking analyses. Generation of this report involved a rigorous, formal, and documented evaluation using objective criteria and qualified and independent reviewers to make a judgment as to the technical/scientific/business merit, the actual or anticipated results, and the productivity and management effectiveness of programs and/or projects. The ''Energy Conservation Standards Rulemaking Peer Review Report'' dated February 2007 has been disseminated and is available at the following Web site: *www1.eere.energy.gov/buildings/appliance_standards/peer_review.html*.

VII. Public Participation

A. Attendance at the Public Meeting

The time, date, and location of the public meeting are listed in the **DATES** and **ADDRESSES** sections at the beginning of this notice. If you plan to attend the public meeting, please notify Ms. Brenda Edwards at (202) 586–2945 or *Brenda.Edwards@ee.doe.gov*.

Please note that foreign nationals visiting DOE Headquarters are subject to advance security screening procedures which require advance notice prior to attendance at the public meeting. If a foreign national wishes to participate in the public meeting, please inform DOE of this fact as soon as possible by contacting Ms. Regina Washington at (202) 586–1214 or by email (*Regina.Washington@ee.doe.gov*) so that the necessary procedures can be completed.

DOE requires visitors to have laptops and other devices, such as tablets, checked upon entry into the Forrestal Building. Any person wishing to bring these devices into the building will be required to obtain a property pass. Visitors should avoid bringing these devices, or allow an extra 45 minutes to check in. Please report to the visitor's desk to have devices checked before proceeding through security.

Due to the REAL ID Act implemented by the Department of Homeland Security (DHS), there have been recent changes regarding identification (ID) requirements for individuals wishing to enter Federal buildings from specific States and U.S. territories. As a result, driver's licenses from several States or territories will not be accepted for building entry, and instead, one of the alternate forms of ID listed below will be required.

DHS has determined that regular driver's licenses (and ID cards) from the following jurisdictions are not acceptable for entry into DOE facilities: Alaska, American Samoa, Arizona, Louisiana, Maine, Massachusetts, Minnesota, New York, Oklahoma, and Washington. Acceptable alternate forms of Photo-ID include: U.S. Passport or Passport Card; an Enhanced Driver's License or Enhanced ID-Card issued by the States of Minnesota, New York or Washington (Enhanced licenses issued by these States are clearly marked Enhanced or Enhanced Driver's License); a military ID or other Federal government-issued Photo-ID card.

In addition, you can attend the public meeting via webinar. Webinar registration information, participant instructions, and information about the capabilities available to webinar participants will be published on DOE's

Web site at: *www1.eere.energy.gov/buildings/appliance_standards/product.aspx/productid/54.* Participants are responsible for ensuring their systems are compatible with the webinar software.

B. Procedure for Submitting Prepared General Statements for Distribution

Any person who has plans to present a prepared general statement may request that copies of his or her statement be made available at the public meeting. Such persons may submit requests, along with an advance electronic copy of their statement in PDF (preferred), Microsoft Word or Excel, WordPerfect, or text (ASCII) file format, to the appropriate address shown in the **ADDRESSES** section at the beginning of this notice. The request and advance copy of statements must be received at least one week before the public meeting and may be emailed, hand-delivered, or sent by mail. DOE prefers to receive requests and advance copies via email. Please include a telephone number to enable DOE staff to make follow-up contact, if needed.

C. Conduct of the Public Meeting

DOE will designate a DOE official to preside at the public meeting and may also use a professional facilitator to aid discussion. The meeting will not be a judicial or evidentiary-type public hearing, but DOE will conduct it in accordance with section 336 of EPCA. (42 U.S.C. 6306) A court reporter will be present to record the proceedings and prepare a transcript. DOE reserves the right to schedule the order of presentations and to establish the procedures governing the conduct of the public meeting. There shall not be discussion of proprietary information, costs or prices, market share, or other commercial matters regulated by U.S. anti-trust laws. After the public meeting, interested parties may submit further comments on the proceedings as well as on any aspect of the rulemaking until the end of the comment period.

The public meeting will be conducted in an informal, conference style. DOE will present summaries of comments received before the public meeting, allow time for prepared general statements by participants, and encourage all interested parties to share their views on issues affecting this rulemaking. Each participant will be allowed to make a general statement (within time limits determined by DOE), before the discussion of specific topics. DOE will allow, as time permits, other participants to comment briefly on any general statements.

At the end of all prepared statements on a topic, DOE will permit participants to clarify their statements briefly and comment on statements made by others. Participants should be prepared to answer questions by DOE and by other participants concerning these issues. DOE representatives may also ask questions of participants concerning other matters relevant to this rulemaking. The official conducting the public meeting will accept additional comments or questions from those attending, as time permits. The presiding official will announce any further procedural rules or modification of the above procedures that may be needed for the proper conduct of the public meeting.

A transcript of the public meeting will be included in the docket, which can be viewed as described in the *Docket* section at the beginning of this notice and will be accessible on the DOE Web site. In addition, any person may buy a copy of the transcript from the transcribing reporter.

D. Submission of Comments

DOE will accept comments, data, and information regarding this proposed rule before or after the public meeting, but no later than the date provided in the **DATES** section at the beginning of this proposed rule. Interested parties may submit comments, data, and other information using any of the methods described in the **ADDRESSES** section at the beginning of this notice.

Submitting comments via regulations.gov. The *www.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 itself 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. Otherwise, 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 *www.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 *www.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 *www.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 *www.regulations.gov* provides after you have successfully uploaded your comment.

Submitting comments via email, hand delivery/courier, or mail. Comments and documents submitted via email, hand delivery/courier, or mail also will be posted to *www.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 in 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/courier, please provide all items on a CD, if feasible, in which case it is not necessary to submit printed copies. No telefacsimiles (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, that are written in English, and that are 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. Pursuant 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/courier 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 that 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).

E. 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. DOE requests comment on the efficiency levels selected for its analysis. Specifically, DOE requests feedback on whether cleaning performance or any other consumer utility is affected at any of the analyzed efficiency levels.

2. DOE requests comment on the recertification costs associated with complying with industry standards, which result from amended DOE standards for commercial prerinse spray valves.

3. DOE seeks additional information on industry capital and product conversion costs of compliance associated with the amended standards for commercial prerinse spray valves proposed in this notice.

4. DOE requests comment on which capital conversion cost scenario more accurately reflects the expected capital conversion costs associated with amended standards for commercial prerinse spray valves.

5. DOE requests additional information and data regarding the number and market share of domestic small manufacturers of commercial prerinse spray valves, as well as small business impacts related to the proposed energy conservation standards.

6. DOE requests comment on the probability of consumers switching product classes as a result of amended standards, as well as the current methods to account for such switching in the shipments model.

7. DOE requests comment on the appropriateness of assuming a constant manufacturer markup across all product classes and efficiency levels.

8. DOE requests comment on any variation in installation costs of commercial prerinse spray valves that is correlated to increases in commercial prerinse spray valve efficiency.

9. DOE requests comment on the estimated MSPs for each of the analyzed efficiency levels. DOE seeks input on what design options manufacturers are likely to incorporate into commercial prerinse spray valve at each of the analyzed efficiency levels, as well as their associated costs.

10. DOE requests comment on what impact, if any, the proposed energy conservation standards would have on domestic manufacturing facilities and their associated employment. DOE requests information on whether domestic manufacturers would move production overseas or source an increased number of products from foreign OEMs under the proposed standards.

11. DOE requests comment on the potential rebound effect from setting the proposed energy conservation standards for commercial prerinse spray valves. DOE requests comments on the potential technology options identified by DOE for improving the efficiency of commercial prerinse spray valves and its screening analysis used to select the most viable options for consideration in setting the proposed standards (see sections IV.A and IV.B of this notice).

12. DOE requests comment on its estimate that standards do not affect a consumer's decision to replace or repair a failed commercial prerinse spray valve. Specifically, DOE seeks any data that indicate how commercial prerinse spray valve replace versus repair decisions are impacted by increased total installed cost, increased repair cost, and energy cost savings.

13. DOE requests comments on the electric water heater thermal efficiency used in the analysis. DOE also requests additional data and references to the potential increase in efficiency that commercial electric and natural gas water heaters will achieve over time.

14. DOE requests comments on whether aerators represent a technologically feasible design option that can be applied to all commercial prerinse spray valves. Additionally DOE requests comment on what kind of utility aerated commercial prerinse spray valves provide to the consumer, and if it is any different from a commercial prerinse spray valve without an aerator.

15. DOE requests comment on the approach to delineate product classes by spray force. Specifically, DOE requests comment on whether the spray force criteria is appropriate, or whether there are any other characteristics that need to be incorporated to determine product classes.

16. DOE requests comment on the proposed product classes, the spray force bounds used to separate product classes, and the number of product classes.

17. DOE requests comment on the approach taken to use the discharge coefficient of the max-tech throughout all efficiency levels. Furthermore, DOE requests information what design decisions manufacturers make to adjust the discharge coefficients of their spray nozzles.

18. DOE requests comment on the cost analysis methodology used to create the MSP-efficiency relationship for each product class.

19. DOE requests comment on the use of 1.30 as an appropriate baseline markup for all commercial prerinse spray valves.

VIII. Approval of the Office of the Secretary

The Secretary of Energy has approved publication of this notice of proposed rulemaking.

List of Subjects

10 CFR Part 429

Administrative practice and procedure, Confidential business information, Energy conservation, Household appliances, Reporting and recordkeeping requirements.

10 CFR Part 431

Administrative practice and procedure, Confidential business information, Energy conservation test procedures, Incorporation by reference, and Reporting and recordkeeping requirements.

Issued in Washington, DC, on June 17, 2015.

David T. Danielson,

Assistant Secretary, Energy Efficiency and Renewable Energy.

For the reasons stated in the preamble, DOE is proposing to amend parts 429 and 431 of Chapter II of Title 10, Code of Federal Regulations as set forth below.

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. Section 429.51(b) is revised to read as follows:

§ 429.51 Commercial prerinse spray valves.

* * * * *

(b) Certification reports. (1) The requirements of § 429.12 are applicable to commercial prerinse spray valves; and

(2) Pursuant to § 429.12(b)(13), a certification report must include the following public product-specific information: The maximum flow rate in gallons per minute (gpm), rounded to the nearest 0.01 gallon, and the average spray force in ounce-force (ozf), rounded to the nearest 0.1 ozf.

PART 431—ENERGY EFFICIENCY PROGRAM FOR CERTAIN COMMERCIAL AND INDUSTRIAL EQUIPMENT

■ 3. The authority citation for part 431 continues to read as follows:

Authority: 42 U.S.C. 6291–6317.

■ 4. Section 431.266 is revised to read as follows:

§ 431.266 Energy conservation standards and their effective dates.

(a) Commercial prerinse spray valves manufactured on or after January 1, 2006 and before [DATE 3 YEARS AFTER PUBLICATION OF THE FINAL RULE ESTABLISHING AMENDED ENERGY CONSERVATION STANDARDS FOR COMMERCIAL PRERINSE SPRAY VALVES IN THE FEDERAL REGISTER], shall have a flow rate of not more than 1.6 gallons per minute.

(b) Commercial prerinse spray valves manufactured on or after [DATE 3 YEARS AFTER PUBLICATION OF THE FINAL RULE ESTABLISHING AMENDED ENERGY CONSERVATION STANDARDS FOR COMMERCIAL PRERINSE SPRAY VALVES IN THE FEDERAL REGISTER] shall have a flow rate that does not exceed the following:

Product class (spray force in ounce-force)	Maximum flow rate (gallons per minute)
Light Duty (≤5 ozf)	0.65
Standard Duty (>5 ozf and ≤8 ozf)	0.97
Heavy Duty (>8 ozf)	1.24

[FR Doc. 2015–16336 Filed 7–8–15; 8:45 am]

BILLING CODE 6450–01–P