ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 52 and Part 81

[EPA–R09–OAR–2015–0432; FRL–9942–00–Region 9]

Approval and Disapproval of California Air Plan; San Joaquin Valley Serious Area Plan and Attainment Date Extension for the 1997 $PM_{2.5}$ NAAQS

AGENCY: U.S. Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA) is proposing to approve, conditionally approve, and disapprove state implementation plan (SIP) revisions submitted by California to address Clean Air Act (CAA or Act) requirements for the 1997 24-hour and annual fine particulate matter ($PM_{2.5}$) national ambient air quality standards (NAAQS) in the San Joaquin Valley (SJV) Serious $PM_{2.5}$ nonattainment area. As part of this action, the EPA is proposing to grant extensions of the Serious area attainment dates for the 1997 24-hour and annual $PM_{2.5}$ NAAQS in the SJV to December 31, 2018 and December 31, 2020, respectively, based on a conclusion that the State has satisfied the statutory criteria for these extensions of the Serious area attainment date. The EPA is also proposing to approve inter-pollutant trading ratios for use in transportation conformity analyses.

DATES: Any comments must arrive by March 10, 2016.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA–R09–OAR–2015–0432 at *http://www.regulations.gov,* or via email to *mays.rory@epa.gov.* For comments submitted at Regulations.gov, follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from Regulations.gov. For either manner of submission, the EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (*i.e.,* on the Web, cloud, or other file sharing system). For additional submission methods, please contact the person identified in the **FOR FURTHER INFORMATION CONTACT** section. For the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit *http://www2.epa.gov/dockets/commenting-epa-dockets.*

FOR FURTHER INFORMATION CONTACT: Rory Mays, Air Planning Office (AIR–2), EPA Region 9, (415) 972–3227, *mays.rory@epa.gov.*

SUPPLEMENTARY INFORMATION: Throughout this document, ''we,'' ''us'' and ''our'' refer to the EPA.

Table of Contents

I. Background

On July 18, 1997, the EPA established new national ambient air quality standards (NAAQS) for particles less than or equal to 2.5 micrometers (μm) in diameter ($PM_{2.5}$), including an annual standard of 15.0 micrograms per cubic meter (μg/m^3) based on a 3-year average of annual mean $PM_{2.5}$ concentrations, and a 24-hour (daily) standard of 65 μg/m^3 based on a 3-year average of 98th percentile 24-hour $PM_{2.5}$ concentrations.[1] The EPA established these standards after considering substantial evidence from numerous health studies demonstrating that serious health effects are associated with exposures to $PM_{2.5}$ concentrations above these levels.

Epidemiological studies have shown statistically significant correlations between elevated $PM_{2.5}$ levels and premature mortality. Other important health effects associated with $PM_{2.5}$ exposure include aggravation of respiratory and cardiovascular disease (as indicated by increased hospital admissions, emergency room visits, absences from school or work, and restricted activity days), changes in lung function and increased respiratory symptoms, as well as new evidence for more subtle indicators of cardiovascular health. Individuals particularly sensitive to $PM_{2.5}$ exposure include older adults, people with heart and lung disease, and children.[2]

$PM_{2.5}$ can be emitted directly into the atmosphere as a solid or liquid particle (primary $PM_{2.5}$ or direct $PM_{2.5}$) or can be formed in the atmosphere as a result of various chemical reactions from precursor emissions of nitrogen oxides, sulfur oxides, volatile organic compounds, and ammonia (secondary $PM_{2.5}$).[3]

Following promulgation of a new or revised NAAQS, the EPA is required under Clean Air Act (CAA) section 107(d) to designate areas throughout the nation as attaining or not attaining the NAAQS. On January 5, 2005, the EPA published initial air quality designations for the 1997 annual and 24-hour $PM_{2.5}$ NAAQS, using air quality monitoring data for the three-year periods of 2001–2003 and 2002–2004.[4] These designations became effective April 5, 2005.[5] The EPA designated the

[1] 62 FR 36852 (July 18, 1997) and 40 CFR 50.7. Effective December 18, 2006, EPA strengthened the 24-hour $PM_{2.5}$ NAAQS by lowering the level to 35 μg/m^3. 71 FR 61144 (October 17, 2006) and 40 CFR 50.13. Effective March 18, 2013, EPA strengthened the primary annual $PM_{2.5}$ NAAQS by lowering the level to 12.0 μg/m^3 while retaining the secondary annual $PM_{2.5}$ NAAQS at the level of 15.0 μg/m^3. 78 FR 3086 (January 15, 2013) and 40 CFR 50.18. In this preamble, all references to the $PM_{2.5}$ NAAQS, unless otherwise specified, are to the 1997 24-hour standards (65 μg/m^3) and annual standards (15.0 μg/m^3) as codified in 40 CFR 50.7.

[2] EPA, Air Quality Criteria for Particulate Matter, No. EPA/600/P–99/002aF and EPA/600/P–99/002bF, October 2004.

[3] 72 FR 20586, 20589 (April 25, 2007).

[4] 70 FR 944 (January 5, 2005).

[5] *Id.*

San Joaquin Valley (SJV) area as nonattainment for both the 1997 annual $PM_{2.5}$ standard (15.0 μg/m³) and the 1997 24-hour $PM_{2.5}$ standard (65 μg/m³).[6]

The SJV $PM_{2.5}$ nonattainment area encompasses over 23,000 square miles and includes all or part of eight counties: San Joaquin, Stanislaus, Merced, Madera, Fresno, Tulare, Kings, and the valley portion of Kern.[7] The area is home to 4 million people and is the nation's leading agricultural region. Stretching over 250 miles from north to south and averaging 80 miles wide, it is partially enclosed by the Coast Mountain range to the west, the Tehachapi Mountains to the south, and the Sierra Nevada range to the east. The San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD or District) has primary responsibility for developing plans to provide for attainment of the NAAQS in this area. The District works cooperatively with the California Air Resources Board (CARB) in preparing attainment plans. Authority for regulating sources under State jurisdiction in the SJV is split between the District, which has responsibility for regulating stationary and most area sources, and CARB, which has responsibility for regulating most mobile sources.

Between 2007 and 2011, California made six SIP submissions to address nonattainment area planning requirements for the 1997 $PM_{2.5}$ NAAQS in the SJV.[8] We refer to these submissions collectively as the ''2008 $PM_{2.5}$ Plan.'' On November 9, 2011, the EPA approved all elements of the 2008 $PM_{2.5}$ Plan except for the contingency measures, which the EPA disapproved.[9] As part of that action and pursuant to CAA section 172(a)(2)(A), the EPA granted California's request for an extension of the attainment date for the SJV area to April 5, 2015.[10] The EPA took these actions in accordance with the ''Clean Air Fine Particle Implementation Rule,'' which the EPA issued in April 2007 to assist states in their development of SIPs to meet the Act's attainment planning requirements for the 1997 $PM_{2.5}$ NAAQS (hereafter ''2007 $PM_{2.5}$ Implementation Rule'').[11] In July 2013, the State submitted a revised $PM_{2.5}$ contingency measure plan for the SJV, which the EPA fully approved in May 2014.[12]

On January 4, 2013, the U.S. Court of Appeals for the D.C. Circuit (''D.C. Circuit'') issued its decision in a challenge by the Natural Resources Defense Council (NRDC) to the EPA's 2007 $PM_{2.5}$ Implementation Rule.[13] In *NRDC,* the court held that the EPA erred in implementing the 1997 $PM_{2.5}$ standards solely pursuant to the general implementation requirements of subpart 1, without also considering the requirements specific to nonattainment areas for particles less than or equal to 10 μm in diameter (PM_{10}) in subpart 4, part D of title I of the CAA. The court reasoned that the plain meaning of the CAA requires implementation of the 1997 $PM_{2.5}$ standards under subpart 4 because $PM_{2.5}$ particles fall within the statutory definition of PM_{10} and are thus subject to the same statutory requirements as PM_{10}. The court remanded the rule, without vacatur, and instructed the EPA ''to repromulgate these rules pursuant to Subpart 4 consistent with this opinion.'' [14]

Consistent with the *NRDC* decision, on June 2, 2014, the EPA published a final rule classifying all areas designated nonattainment for the 1997 and/or 2006 $PM_{2.5}$ standards as ''moderate'' nonattainment under subpart 4.[15] Because this rulemaking did not affect any action that the EPA had previously taken under section 110(k) of the Act on a SIP for a $PM_{2.5}$ nonattainment area, the April 5, 2015 attainment date that the EPA had approved for the SJV area in November 2011 remained in effect.[16] On April 7, 2015, the EPA published a final rule reclassifying the SJV area as ''serious'' nonattainment under subpart 4, based on the EPA's determination that the area could not practicably attain the 1997 $PM_{2.5}$ standards by the April 5, 2015 attainment date.[17] This reclassification was based upon the EPA's evaluation of ambient air quality data from the 2003–2014 period, including the 2012–2014 design value, indicating that it was not practicable for certain monitoring sites within the SJV area to show $PM_{2.5}$ design values at or below the level of the 1997 $PM_{2.5}$ NAAQS by April 5, 2015.[18]

As a consequence of its reclassification as a Serious $PM_{2.5}$ nonattainment area, the SJV area became subject to a new attainment date under CAA section 188(c)(2) and the requirement to submit a Serious area plan that satisfies the requirements of part D of title I of the Act, including the requirements of subpart 4, for the 1997 $PM_{2.5}$ NAAQS.[19] Under subpart 4, the attainment date for an area classified as Serious is as expeditiously as practicable, but no later than the end of the tenth calendar year following designation. As explained in the EPA's final reclassification action, the Serious area plan for SJV must include provisions to assure that the best available control measures (BACM) for the control of direct $PM_{2.5}$ and $PM_{2.5}$ precursors shall be implemented no later than 4 years after the area is reclassified (CAA section 189(b)(1)(B)), and a demonstration (including air quality modeling) that the plan provides for attainment as expeditiously as practicable but no later than December 31, 2015, which is the latest permissible attainment date under CAA section 188(c)(2).[20]

Given the December 31, 2015 outermost attainment deadline for the SJV area under section 188(c)(2), the EPA noted its expectation that the State would adopt and submit a Serious area plan for the SJV well before the statutory SIP submission deadlines in CAA section 189(b)(2).[21] The EPA also noted that, in light of the available ambient air quality data and the short amount of time available before the December 31, 2015 attainment date, California may choose to submit a request for an extension of the Serious area attainment date pursuant to CAA

[6] 40 CFR 81.305. The 2001–2003 design values for the San Joaquin Valley were 21.8 μg/m3 for the annual standard and 82 μg/m3 for the 24-hour standard. *See* EPA design value workbook dated August 12, 2014, worksheets ''Table 3a'' and ''Table 3b.''

[7] For a precise description of the geographic boundaries of the San Joaquin Valley $PM_{2.5}$ nonattainment area, see 40 CFR 81.305.

[8] 76 FR 69896 at n. 2 (November 9, 2011).

[9] *Id.* at 69924.

[10] *Id.* Under CAA section 172(a)(2)(A), the attainment date for a nonattainment area is ''the date by which attainment can be achieved as expeditiously as practicable, but no later than five years from the date such area was designated nonattainment,'' except that EPA may extend the attainment date as appropriate for a period no greater than ten years from the date of designation as nonattainment, considering the severity of nonattainment and the availability and feasibility of pollution control measures. CAA section 172(a)(2)(A); *see also* 40 CFR 51.1004(a) and (b).

[11] 72 FR 20583 (April 25, 2007), codified at 40 CFR part 51, subpart Z. This rule was premised on EPA's prior interpretation of the Act as allowing for implementation of the $PM_{2.5}$ NAAQS solely pursuant to the general nonattainment area provisions of subpart 1 and not the more specific provisions for particulate matter nonattainment areas in subpart 4 of part D, title I of the Act.

[12] 79 FR 29327 (May 22, 2014).

[13] *Natural Resources Defense Council* v. *EPA,* 706 F.3d 428 (D.C. Cir. 2013) (''*NRDC*'').

[14] *Id.*

[15] 79 FR 31566 (June 2, 2014). As part of this rulemaking, EPA established a December 31, 2014 deadline for states to submit attainment-related and nonattainment new source review (NNSR) SIP elements required for $PM_{2.5}$ nonattainment areas pursuant to subpart 4. *Id.*

[16] *Id.* at 31569.

[17] 80 FR 18528 (April 7, 2015).

[18] *Id.* at 18529; *see also* proposed rule, 80 FR 1482 (January 12, 2015). Air quality data for 2012–2014 indicated that the highest monitors in the SJV area had design values of 19.7 μg/m³ for the annual standard and 71 μg/m³ for the 24-hour standard.

[19] 80 FR 18258 at 18530–18532.

[20] *Id.*

[21] *Id.* at 18531.

section 188(e) simultaneously with its submission of a Serious area plan for the area.[22]

II. Summary of the San Joaquin Valley 2015 $PM_{2.5}$ Plan

We are proposing action on two California SIP submissions that address the 1997 annual and 24-hour $PM_{2.5}$ NAAQS in the San Joaquin Valley. The first submission is the ''2015 Plan for the 1997 $PM_{2.5}$ Standard,'' which the State submitted to the EPA on June 25, 2015.[23] The second submission is the ''2018 Transportation Conformity Budgets for the San Joaquin Valley $PM_{2.5}$ SIP, Plan Supplement,'' which the State submitted to the EPA on August 13, 2015.[24] We refer to these SIP submissions collectively herein as the ''2015 $PM_{2.5}$ Plan'' or ''the Plan.'' The 2015 $PM_{2.5}$ Plan is a $PM_{2.5}$ Serious area plan for the SJV and includes a request to extend the applicable attainment dates for the annual and 24-hour $PM_{2.5}$ standards by five and three years, respectively, on the basis that attainment by December 31, 2015 is impracticable, in accordance with CAA section 188(e).

The first submission includes two sets of documents: The ''2015 Plan for the $PM_{2.5}$ Standard,'' adopted by the SJVUAPCD Governing Board on April 16, 2015 and the ''Staff Report, ARB Review of San Joaquin Valley $PM_{2.5}$ State Implementation Plan,'' adopted by CARB on May 21, 2015 (''CARB Staff Report''). Both sets of documents include Appendices A and B. To distinguish between the two sets of appendices, we refer to those adopted by the SJVUAPCD Governing Board simply as ''Appendix A'' (''Ambient $PM_{2.5}$ Data Analysis'') and ''Appendix B'' (''Emission Inventory Tables''), and we refer to the additional appendices that accompany CARB's Staff Report as ''WOEA'' for Appendix A (''San Joaquin Valley $PM_{2.5}$ Weight of Evidence Analysis'') and ''CARB Staff Report, Appendix B'' for Appendix B (''San Joaquin Valley $PM_{2.5}$ SIP Additional Emission Reductions Towards Meeting Aggregate Commitment'').

The 2015 $PM_{2.5}$ Plan includes an Executive Summary and a description of air quality standards and requirements applicable to the SJV (Chapter 1), $PM_{2.5}$ challenges and trends (Chapter 2, including a summary of the District's determination regarding air pollutant precursors to $PM_{2.5}$), and health impacts and risk reduction strategy (Chapter 3).[25] Chapter 4 presents the SJVUAPCD's request for an extension of the $PM_{2.5}$ Serious area attainment date; summary arguments for how the SJVUAPCD claims it has met the extension requirements of CAA section 188(e), including a demonstration that attainment of the 1997 $PM_{2.5}$ NAAQS by December 31, 2015 is impracticable; a demonstration, as detailed in Appendix F (''Attainment Demonstration (Provided by ARB)''), of attainment by the most expeditious alternative date practicable; and financial commitments to achieve further emission reductions by replacing heavy duty trucks and residential wood burning devices through the District's truck replacement incentive program and Burn Cleaner Incentive Program, respectively.

Chapter 5, Appendix C (''BACM and MSM for Stationary and Area Sources''), and Appendix D (''BACM and MSM for Mobile Sources (Provided by ARB)'') provide analyses of District and State rules to address the statutory requirements for Best Available Control Measures (BACM) and Most Stringent Measures (MSM) and the District's calculation of de minimis thresholds for directly emitted $PM_{2.5}$ (direct $PM_{2.5}$), nitrogen oxides (NO_X), and sulfur oxides (SO_X).

Chapters 6 and 7 present the District's summary analysis to address the planning requirements for $PM_{2.5}$ Serious nonattainment areas under subparts 1 and 4 of part D, title I of the CAA, including the statutory requirements for extension requests under CAA section 188(e). These include the District's analysis and demonstration, in Chapter 6, of its compliance with the requirements and commitments in the implementation plan for the 1997 $PM_{2.5}$ NAAQS, reasonably available control measures (RACM), reasonable further progress (RFP) and quantitative milestones, contingency measures, transportation conformity budgets for 2014, 2017, and 2020, and permitting of new and modified major stationary sources (*i.e.,* nonattainment new source review (NSR)).[26] Chapter 7 describes the State's and District's regulatory control strategy, incentive programs, technology advancement program, legislative strategy, and public outreach.[27] Finally, Chapter 8 presents the District's commitments to evaluate opportunities for additional emission reductions in general, and specifically from three source categories: Flares, asphalt, and conservation management practices.

The additional documents adopted by CARB on May 21, 2015 supplement the analysis and demonstrations of those adopted by SJVUAPCD. In particular, the CARB Staff Report presents estimated emission reductions by 2018 and 2020 from specific District control measures; an accounting of how the State has complied with its control measure and emission reduction commitments in the 2008 $PM_{2.5}$ Plan; analysis of ammonia effects on reasonable further progress planning; and 2021 attainment year contingency reductions from specific measures.[28] These additional documents also include the methodology and results for the attainment demonstration,[29] a weight of evidence analysis for the attainment demonstration (WOEA), a discussion of additional emission reductions achieved towards the aggregate tonnage commitments of the 2008 $PM_{2.5}$ Plan (CARB Staff Report, Appendix B), and technical clarifications for the 2015 $PM_{2.5}$ Plan as a whole (Technical Clarifications).[30] Finally, transportation conformity budgets for 2018 are presented in a supplemental SIP revision adopted July 23, 2015 and entitled ''Transportation Conformity Budgets for the San Joaquin Valley $PM_{2.5}$ SIP Plan Supplement.''

We present our evaluation of the 2015 $PM_{2.5}$ Plan in section V of this proposed rule. Given the overlap of some control and planning requirements between a $PM_{2.5}$ Serious area plan and a request for extension of the $PM_{2.5}$ Serious area attainment date, we generally address these requirements together rather than separately. For example, we address the BACM requirement for Serious area plans and the MSM requirement for extension requests together in section V.D. of this proposed rule. Similarly, we address the requirement for a Serious area attainment demonstration and the requirement to demonstrate attainment by the most expeditious alternative date practicable, for purposes of requesting an extension of the attainment date,

[22] *Id.*

[23] Letter dated June 25, 2015, from Richard Corey, Executive Officer, California Air Resources Board, to Jared Blumenfeld, Regional Administrator, EPA Region 9, with enclosures.

[24] Letter dated August 13, 2015, from Richard Corey, Executive Officer, California Air Resources Board, to Jared Blumenfeld, Regional Administrator, EPA Region 9, with enclosures.

[25] *See* 2015 $PM_{2.5}$ Plan, Appendix A, regarding trends.

[26] *See also,* 2015 $PM_{2.5}$ Plan, Appendix B and Appendix G (''New Source Review (NSR) and Emission Reduction Credits (ERCs)'').

[27] *See also,* 2015 $PM_{2.5}$ Plan, Appendix E (''Incentive and Other Non-regulatory Strategies'').

[28] 2015 $PM_{2.5}$ Plan, ''Staff Report, ARB Review of San Joaquin Valley $PM_{2.5}$ State Implementation Plan,'' release date April 20, 2015, pp. 9, 17–22, 25–26, and 26–27, respectively.

[29] 2015 $PM_{2.5}$ Plan, ''Attainment Demonstration for the San Joaquin Valley 2015 $PM_{2.5}$ Plan for the Annual (15 $\mu g/m^3$) and 24-hour (65 $\mu g/m^3$) Standards.''

[30] 2015 $PM_{2.5}$ Plan, ''Technical Clarifications to the 2015 San Joaquin Valley $PM_{2.5}$ State Implementation Plan.''

together in section V.E.5 of this proposed rule.

III. Completeness Review of the San Joaquin Valley 2015 $PM_{2.5}$ Plan

CAA sections 110(a)(1) and (2) and 110(l) require each state to provide reasonable public notice and opportunity for public hearing prior to the adoption and submission of a SIP or SIP revision to the EPA. To meet this requirement, every SIP submission should include evidence that adequate public notice was given and an opportunity for a public hearing was provided consistent with the EPA's implementing regulations in 40 CFR 51.102.

Both the District and CARB satisfied applicable statutory and regulatory requirements for reasonable public notice and hearing prior to adoption and submission of the 2015 $PM_{2.5}$ Plan. The District conducted a public workshop, provided a public comment period, and held a public hearing prior to the adoption of the main SIP submission on April 16, 2015.[31] CARB provided the required public notice and opportunity for public comment prior to its May 21, 2015 public hearing and adoption of the main SIP submission.[32] CARB then adopted its supplemental SIP submission pertaining to 2018 transportation conformity motor vehicle emission budgets at its July 23, 2015 Board meeting after reasonable public notice.[33] Each submission includes proof of publication of notices for the respective public hearings. We find, therefore, that the 2015 $PM_{2.5}$ Plan meets the procedural requirements for public notice and hearing in CAA sections 110(a) and 110(l).

CAA section 110(k)(1)(B) requires the EPA to determine whether a SIP submission is complete within 60 days of receipt. This section also provides that any plan that the EPA has not affirmatively determined to be complete or incomplete will become complete by operation of law six months after the date of submission. The EPA's SIP completeness criteria are found in 40 CFR part 51, Appendix V. The initial SIP submission, dated June 25, 2015, became complete by operation of law on December 25, 2015 and we find that the SIP submission pertaining to 2018 transportation conformity motor vehicle emission budgets, dated August 13, 2015, satisfies the completeness criteria in 40 CFR part 51, appendix V.

IV. Clean Air Act Requirements for $PM_{2.5}$ Serious Area Plans

A. $PM_{2.5}$ Serious Area Plan Requirements

Upon reclassification of a Moderate nonattainment area as a Serious nonattainment area under subpart 4, the CAA requires the State to submit the following Serious area SIP elements: [34]

1. A comprehensive, accurate, current inventory of actual emissions from all sources of $PM_{2.5}$ and $PM_{2.5}$ precursors in the area (CAA section 172(c)(3));

2. Provisions to assure that the best available control measures (BACM), including best available control technology (BACT), for the control of direct $PM_{2.5}$ and $PM_{2.5}$ precursors shall be implemented no later than 4 years after the area is reclassified (CAA section 189(b)(1)(B));

3. A demonstration (including air quality modeling) that the plan provides for attainment as expeditiously as practicable but no later than December 31, 2015, or where the State is seeking an extension of the attainment date under section 188(e), a demonstration that attainment by December 31, 2015 is impracticable and that the plan provides for attainment by the most expeditious alternative date practicable (CAA sections 188(c)(2) and 189(b)(1)(A));

4. Plan provisions that require reasonable further progress (RFP) (CAA section 172(c)(2));

5. Quantitative milestones which are to be achieved every 3 years until the area is redesignated attainment and which demonstrate RFP toward attainment by the applicable date (CAA section 189(c));

6. Provisions to assure that control requirements applicable to major stationary sources of $PM_{2.5}$ also apply to major stationary sources of $PM_{2.5}$ precursors, except where the State demonstrates to the EPA's satisfaction that such sources do not contribute significantly to $PM_{2.5}$ levels that exceed the standard in the area (CAA section 189(e));

7. Contingency measures to be implemented if the area fails to meet RFP or to attain by the applicable attainment date (CAA section 172(c)(9)); and

8. A revision to the nonattainment new source review (NSR) program to lower the applicable ''major stationary source'' [35] thresholds from 100 tons per year (tpy) to 70 tpy (CAA section 189(b)(3)).

Serious area $PM_{2.5}$ plans must also satisfy the requirements for Moderate area plans in CAA section 189(a), to the extent those requirements have not already been satisfied in the Moderate area plan submitted for the area; the general requirements applicable to all SIP submissions under section 110 of the CAA; the requirement to provide necessary assurances that the implementing agencies have adequate personnel, funding and authority under section 110(a)(2)(E); and the requirements concerning enforcement provisions in section 110(a)(2)(C).

The EPA provided its preliminary views on the CAA's requirements for particulate matter plans under part D, title I of the Act in the following guidance documents: (1) ''State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990, 57 FR 13498 (April 16, 1992) (hereafter ''General Preamble''); (2) ''State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990; Supplemental,'' 57 FR 18070 (April 28, 1992) (hereafter ''Supplement''); and (3) ''State Implementation Plans for Serious PM–10 Nonattainment Areas, and Attainment Date Waivers for PM–10 Nonattainment Areas Generally; Addendum to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990,'' 59 FR 41998 (August 16, 1994) (hereafter ''Addendum''). Additionally, in a proposed rule published March 23, 2015 (80 FR 15340), the EPA provided further interpretive guidance on the statutory SIP requirements that apply to areas designated nonattainment for the $PM_{2.5}$ standards (hereafter ''Proposed $PM_{2.5}$ Implementation Rule''). We discuss these preliminary interpretations of the Act as appropriate in our evaluation of the 2015 $PM_{2.5}$ Plan in section V of this proposed rule.

[31] SJVUAPCD, ''Notice of Public Workshop [on] Draft Plan for the 1997 $PM_{2.5}$ Standard,'' March 2, 2015; SJVUAPCD, ''Notice of Public Hearing [to] Adopt Proposed 2015 Plan for the 1997 $PM_{2.5}$ Standard,'' March 17, 2015; and SJVUAPCD Governing Board Resolution 15–4–7A, ''In the Matter of Adopting the San Joaquin Valley Unified Air Pollution Control District 2015 Plan for the 1997 $PM_{2.5}$ Standard,'' April 16, 2015.

[32] CARB, ''Notice of Public Meeting to Consider Approval of the San Joaquin Valley $PM_{2.5}$ State Implementation Plan,'' April 20, 2015; and CARB Board Resolution 15–9, ''San Joaquin Valley $PM_{2.5}$ State Implementation Plan,'' May 21, 2015.

[33] CARB, ''Notice of Public Meeting to Consider the Approval of Transportation Conformity Budgets for the San Joaquin Valley $PM_{2.5}$ State Implementation Plan,'' June 19, 2015; and CARB Board Resolution 15–39, ''San Joaquin Valley $PM_{2.5}$ State Implementation Plan,'' July 23, 2015.

[34] 80 FR 18528, 18531 (April 7, 2015).

[35] For any Serious area, the terms ''major source'' and ''major stationary source'' include any stationary source that emits or has the potential to emit at least 70 tons per year of PM_{10} (CAA section 189(b)(3)).

B. Implementation of Best Available Control Measures

Section 189(b)(1)(B) of the Act requires for any serious $PM_{2.5}$ nonattainment area that the State submit provisions to assure that the best available control measures (BACM) for the control of $PM_{2.5}$ and $PM_{2.5}$ precursors shall be implemented no later than four years after the date the area is reclassified as a serious area. The EPA defines BACM as, among other things, the maximum degree of emissions reduction achievable for a source or source category, which is determined on a case-by-case basis considering energy, environmental, and economic impacts.[36] We generally consider BACM a control level that goes beyond existing RACM-level controls, for example by expanding the use of RACM controls or by requiring preventative measures instead of remediation.[37] Indeed, as implementation of BACM and BACT is required when a Moderate nonattainment area is reclassified as Serious due to its inability to attain the NAAQS through implementation of ''reasonable'' measures, it is logical that ''best'' control measures should represent a more stringent and potentially more costly level of control.[38]

The EPA has historically provided an exemption from BACM and BACT for source categories that contribute only *de minimis* levels to ambient PM_{10} concentrations in a Serious nonattainment area. The Addendum discusses the following steps for determining BACM:

1. Develop a detailed emission inventory of the sources of $PM_{2.5}$ and $PM_{2.5}$ precursors;
2. Evaluate source category impacts;
3. Evaluate alternative control techniques and their technological feasibility; and
4. Evaluate the costs of control (*i.e.,* economic feasibility).[39]

Once these analyses are complete, the State must use this information to develop enforceable control measures and submit them to the EPA for evaluation under CAA section 110. We use these steps as guidelines in our evaluation of the BACM measures and related analyses in the 2015 $PM_{2.5}$ Plan.

C. Implementation of Reasonably Available Control Measures

When the EPA reclassifies a Moderate area to Serious under subpart 4, the requirement to implement reasonably available control measures (RACM) in section 189(a)(1)(C) remains. Thus, a Serious area $PM_{2.5}$ plan must also provide for the implementation of RACM as expeditiously as practicable, to the extent that the RACM requirement has not been satisfied in the area's Moderate area plan.[40]

However, the EPA does not normally conduct a separate evaluation to determine whether a Serious area plan's measures also meet the RACM requirements. As explained in the Addendum, we interpret the BACM requirement as generally subsuming the RACM requirement—*i.e.,* if we determine that the measures are indeed the ''best available,'' we have necessarily concluded that they are ''reasonably available.''[41] Therefore, a separate analysis to determine if the measures represent a RACM level of control is not necessary. A proposed approval of a Plan's provisions concerning implementation of BACM is also a proposed finding that the Plan provides for the implementation of RACM.

D. Extension of the Serious Area Attainment Date Beyond 2015

Under section 188(e) of the Act, a state may apply to the EPA for a single extension of the Serious area attainment date by up to 5 years, which the EPA may grant if the State satisfies certain conditions. Before the EPA may extend the attainment date for a Serious area under section 188(e), the State must: (1) Apply for an extension of the attainment date beyond the statutory attainment date; (2) demonstrate that attainment by the statutory attainment date is impracticable; (3) have complied with all requirements and commitments pertaining to the area in the implementation plan; (4) demonstrate to the satisfaction of the Administrator that the plan for the area includes the ''most stringent measures'' that are included in the implementation plan of any State or are achieved in practice in any State, and can feasibly be implemented in the area; and (5) submit a demonstration of attainment by the most expeditious alternative date practicable.[42]

In addition to establishing these preconditions for an extension of the Serious area attainment date, section 188(e) provides that the EPA may consider a number of factors in determining whether to grant an extension and the appropriate length of time for any such extension. These factors are: (1) The nature and extent of nonattainment in the area, (2) the types and numbers of sources or other emitting activities in the area (including the influence of uncontrollable natural sources and trans-boundary emissions from foreign countries), (3) the population exposed to concentrations in excess of the standard in the area, (4) the presence and concentrations of potentially toxic substances in the mix of particulate emissions in the area, and (5) the technological and economic feasibility of various control measures.[43] Notably, neither the statutory requirements nor the discretionary factors identified in section 188(e) include the specific ambient air quality conditions in section 188(d)(2), which must be met for an area to qualify for an extension of a Moderate area attainment date.

The EPA has previously interpreted section 188(e) in approving an extension of the PM_{10} Serious area attainment date for the Phoenix Metropolitan area in Maricopa County, Arizona.[44] We propose to generally follow the steps provided in that rulemaking action for addressing the statutory requirements for an extension of the Serious area attainment date under section 188(e) as described below.

Step 1: Demonstrate that attainment by the statutory Serious area attainment date is impracticable.

Section 188(e) authorizes the EPA to grant a state request for an extension of the Serious area attainment date if,

[36] Addendum at 42010, 42013.

[37] *Id.* at 42011, 42013.

[38] *Id.* at 42009–42010.

[39] *Id.* at 42012–42014.

[40] EPA previously approved California's RACM demonstration for the 1997 $PM_{2.5}$ NAAQS in the SJV (76 FR 69896, November 9, 2011). On May 20, 2015, the Ninth Circuit Court of Appeals remanded this final rule to EPA on the grounds that the California mobile source ''waiver measures'' upon which the plan relied were not federally enforceable components of the approved SIP. *Committee for a Better Arvin* v. *EPA,* 786 F.3d 1169 (9th Cir. 2015). On November 12, 2015, the EPA proposed to approve the relevant waiver measures into the SIP and to thereby make them federally enforceable under the CAA. 80 FR 69915 (November 12, 2015). Final approval of these waiver measures would cure the deficiency in California's RACM demonstration for the 1997 $PM_{2.5}$ NAAQS in the SJV.

[41] Addendum at 42010.

[42] For a discussion of EPA's interpretation of the requirements of section 188(e), *see* Addendum at 42002 (August 16, 1994); 65 FR 19964 (April 13, 2000) (proposed action on PM_{10} Plan for Maricopa County, Arizona); 66 FR 50252 (October 2, 2001) (proposed action on PM_{10} Plan for Maricopa County, Arizona); 67 FR 48718 (July 25, 2002) (final action on PM_{10} Plan for Maricopa County, Arizona); and *Vigil* v. *EPA,* 366 F.3d 1025, amended at 381 F.3d 826 (9th Cir. 2004) (remanding EPA action on PM_{10} Plan for Maricopa County, Arizona but generally upholding EPA's interpretation of CAA section 188(e)).

[43] CAA section 188(e).

[44] *See* 65 FR 19964 (April 13, 2000) (proposed action on Maricopa County Serious Area Plan, annual PM_{10} standard); 66 FR 50252 (October 2, 2001) (proposed action on Maricopa County Serious Area Plan, 24-hour PM_{10} standard); and 67 FR 48718 (July 25, 2002) (final action on Maricopa County Serious Area Plan).

among other things, attainment by the date established under section 188(c) would be impracticable. In order to demonstrate impracticability, the plan must show that the implementation of BACM and BACT on relevant source categories will not bring the area into attainment by the statutory Serious area attainment date. For the SJV, the Serious area attainment date under section 188(c)(2) is December 31, 2015.[45] BACM, including BACT, is the required level of control for serious areas that must be in place before the Serious area attainment date. Therefore, we interpret the Act as requiring that a state provide for at least the implementation of BACM, including BACT, before it can claim impracticability of attainment by the statutory deadline. The statutory provision for demonstrating impracticability requires that the demonstration be based on air quality modeling.[46]

This interpretation parallels our interpretation of the impracticability option for Moderate PM_{10} nonattainment areas in section 189(a)(1)(B), under which implementation of a RACM/RACT control strategy, at a minimum, is a prerequisite for approval of a Moderate area plan demonstrating impracticability of attainment by the Moderate area attainment date.[47]

Step 2: Comply with all requirements and commitments in the applicable implementation plan.

A second precondition for an extension of the Serious area attainment under section 188(e) is a showing that the State has complied with all requirements and commitments pertaining to that area in the implementation plan. We interpret this criterion to mean that the State has implemented the control measures and commitments in the SIP revisions it has submitted to address the applicable requirements in CAA sections 172 and 189 for $PM_{2.5}$ nonattainment areas. For a Serious area attainment date extension request being submitted simultaneously with the initial Serious area attainment plan for the area, the EPA proposes to read section 188(e) not to require the area to have a fully approved Moderate area attainment plan and to allow for extension of the attainment date if the area has complied with all Moderate area requirements and commitments pertaining to that area in the State's submitted Moderate area implementation plan. This interpretation is based on the plain language of section 188(e), which requires the State to comply with all requirements and commitments pertaining to the area in the implementation plan.[48]

Step 3: Demonstrate the inclusion of the most stringent measures.

A third precondition for an extension of the Serious area attainment under section 188(e) is for the State to demonstrate to the satisfaction of the Administrator that the plan for the area includes the most stringent measures that are included in the implementation plan of any state, or are achieved in practice in any state, and can feasibly be implemented in the area. The EPA has interpreted the term ''most stringent measure'' (MSM) to mean the maximum degree of emission reduction that has been required or achieved from a source or source category in any other attainment plan or in practice in any other state and that can feasibly be implemented in the area seeking the extension.[49] The Act does not specify an implementation deadline for MSM. Because the clear intent of section 188(e) is to minimize the length of any attainment date extension, we propose that the implementation of MSM should be as expeditiously as practicable.

An MSM demonstration should follow a process similar to a BACM demonstration, but with one additional step, as follows:

1. Develop a detailed emission inventory of the sources of $PM_{2.5}$ and $PM_{2.5}$ precursors;

2. Evaluate source category impacts;

3. Identify the potentially most stringent measures in other implementation plans or used in practice in other states for each relevant source category and, for each measure, determine their technological and economic feasibility in the nonattainment area;

4. Compare the potential MSM for each relevant source category to the measures, if any, already adopted for that source category in the Serious nonattainment area to determine whether such potential MSM would further reduce emissions; and

5. Provide for the adoption and expeditious implementation of any MSM that is more stringent than existing measures or, in lieu of adoption, provide a reasoned justification for rejecting the potential MSM (*i.e.,* provide an explanation as to why such measures cannot feasibly be implemented in the area).[50]

The level of control required under the MSM standard may depend on how well other areas have chosen to control their sources. If a source category has not been well controlled in other areas then MSM could theoretically result in a low level of control. This contrasts with BACM which is determined independently of what other areas have done and depends only on what is the best level of control feasible for an area.[51] On the other hand, given the strategy in the nonattainment provisions of the Act to offset longer attainment timeframes with more stringent emission control requirements, we interpret the MSM provision to assure that it results in additional controls beyond the set of measures adopted as BACM. Two ways to do this are (1) to require that more sources and source categories be subject to MSM analysis than to BACM analysis, that is, by expanding the applicability provisions in the MSM control requirements to cover more sources, and (2) to require reanalysis of any measures adopted in other areas that were rejected during the BACM analysis because they could not be implemented by the BACM implementation deadline to see if they are now feasible for the area given the longer attainment timeframe.[52]

Notably, the ''to the satisfaction of the Administrator'' qualifier on the MSM requirement indicates that Congress granted the EPA considerable discretion in determining whether a plan in fact includes MSM, recognizing that the overall intent of section 188(e) is that we grant as short an extension as practicable. For this reason, the EPA will apply greater scrutiny to the evaluation of MSM for source categories that contribute the most to the $PM_{2.5}$ problem in the SJV and less scrutiny to source categories that contribute little to the $PM_{2.5}$ problem.

Step 4: Demonstrate attainment by the most expeditious alternative date practicable.

Section 189(b)(1)(A) requires that the Serious area plan for the SJV area

[45] Under CAA section 188(c)(2), the attainment date for a Serious area ''shall be as expeditiously as practicable but no later than the end of the tenth calendar year beginning after the area's designation as nonattainment . . . .'' EPA designated the SJV area as nonattainment for the 1997 $PM_{2.5}$ standards effective April 5, 2005 (70 FR 944, 956–957, January 5, 2005). Therefore, the latest permissible attainment date under section 188(c)(2), for purposes of the 1997 $PM_{2.5}$ standards in this area, is December 31, 2015.

[46] CAA section 189(b)(1)(A).

[47] General Preamble at 13544; *see also* 65 FR 19964, 19968 (April 13, 2000).

[48] The Ninth Circuit Court of Appeals upheld this interpretation of section 188(e) in *Vigil* v. *Leavitt,* 366 F.3d 1025, amended at 381 F.3d 826 (9th Cir. 2004).

[49] 65 FR 19964, 19968 (April 13, 2000); *see also* Addendum at 42010.

[50] 65 FR 19964, 19968 (April 13, 2000); *see also* Proposed $PM_{2.5}$ Implementation Rule at 15420 (March 23, 2015).

[51] *Id.*

[52] 65 FR 19964, 19968–19969.

demonstrate attainment, using air quality modeling, by the most expeditious date practicable after December 31, 2015. Because the 1997 annual and 24-hour $PM_{2.5}$ standards are independent standards, section 189(b)(1)(A) requires a demonstration of attainment by the most expeditious date practicable for each standard.[53]

Evaluation of a modeled attainment demonstration consists of two parts: Evaluation of the technical adequacy of the modeling itself and evaluation of the control measures that are relied on to demonstrate attainment. The EPA's determination of whether the plan provides for attainment by the most expeditious date practicable depends on whether the plan provides for implementation of BACM and BACT no later than the statutory implementation deadline, MSM as expeditiously as practicable, and any other technologically and economically feasible measures that will result in attainment as expeditiously as practicable.

Step 5: Apply for an attainment date extension.

Finally, the State must apply in writing to the EPA for an extension of a Serious area attainment date, and this request must accompany the modeled attainment demonstration showing attainment by the most expeditious alternative date practicable. Additionally, the State must provide the public reasonable notice and opportunity for a public hearing on the attainment date extension request before submitting it to the EPA, in accordance with the requirements for SIP revisions in CAA section 110.

V. Review of the San Joaquin Valley $PM_{2.5}$ Serious Area Plan and Extension Application

A. Emissions Inventory

1. Requirements for Emissions Inventories

CAA section 172(c)(3) requires that each SIP include a ''comprehensive, accurate, current inventory of actual emissions from all sources of the relevant pollutant or pollutants in [the area . . . .'' By requiring an accounting of actual emissions from all sources of the relevant pollutants in the area, this section provides for the base year inventory to include all emissions that contribute to the formation of a particular NAAQS pollutant. For the 1997 $PM_{2.5}$ standards, this includes direct $PM_{2.5}$ as well as the main chemical precursors to the formation of secondary $PM_{2.5}$: NO_X, sulfur dioxide (SO_2), volatile organic compounds (VOC), and ammonia (NH_3). Primary $PM_{2.5}$ includes condensable and filterable particulate matter.

A state must include in its SIP submission documentation explaining how the emissions data were calculated. In estimating mobile source emissions, a state should use the latest emissions models and planning assumptions available at the time the SIP is developed. States are also required to use the EPA's *Compilation of Air Pollutant Emission Factors* (AP–42) [54] road dust method for calculating re-entrained road dust emissions from paved roads.[55] The latest EPA-approved version of California's mobile source emission factor model is EMFAC2014.[56]

In addition to the base year inventory submitted to meet the requirements of CAA section 172(c)(3), the State must also submit future ''baseline inventories'' for the projected attainment year and each reasonable further progress (RFP) milestone year, and any other year of significance for meeting applicable CAA requirements.[57] By ''baseline inventories'' (also referred to as ''projected baseline inventories''), we mean projected emissions inventories for future years that account for, among other things, the ongoing effects of economic growth and adopted emissions control requirements. The SIP should include documentation to explain how the emissions projections were calculated.

2. Emissions Inventories in the 2015 $PM_{2.5}$ Plan

The planning inventories for direct $PM_{2.5}$ and all $PM_{2.5}$ precursors (NO_X, SO_X, VOC, and ammonia) for the SJV $PM_{2.5}$ nonattainment area together with documentation for the inventories are found in SJV Appendix B of the 2015 $PM_{2.5}$ Plan. Annual average inventories and winter daily average inventories, representing conditions in the period November through April, are provided for the base year of 2012 and each baseline year from 2013 to 2020. The winter daily average inventory is useful to evaluate sources of emissions during the portion of the year when the vast majority of exceedances of the 1997 24-hour $PM_{2.5}$ NAAQS occur. Baseline inventories reflect all control measures adopted prior to January 2012. Growth factors used to project these baseline inventories are derived from data obtained from a number of sources such as the California Energy Commission (CEC), the Division of Oil, Gas, and Geothermal Resources (DOGGR), and the California Department of Finance, as well as studies commissioned by the SJV's metropolitan planning organizations.[58]

Each inventory includes emissions from point, area, on-road, and non-road sources. The inventories use EMFAC2014 for estimating on-road motor vehicle emissions.[59] Re-entrained paved road dust emissions were calculated using the EPA's AP–42 road dust methodology.[60]

Tables 1 and 2 provide a summary of the annual average and winter daily average inventories of direct $PM_{2.5}$ and $PM_{2.5}$ precursors for the base year of 2012. The District provides its reasons for selecting 2012 as the base year in Appendix B of the Plan.[61] These inventories provide the basis for the control measure analysis and the RFP and attainment demonstrations in the 2015 $PM_{2.5}$ Plan.

---

[53] *Ober* v. *EPA,* 84 F.3d 304 (9th Cir. 1996) (noting that the CAA requires independent treatment of the annual and 24-hour PM_{10} standards in an implementation plan).

[54] EPA released an update to AP–42 in January 2011, which revised the equation for estimating paved road dust emissions based on an updated data regression that included new emission tests results.

[55] 76 FR 6328 (February 4, 2011).

[56] 80 FR 77337 (December 14, 2015).

[57] 40 CFR 51.1007(a), 51.1008(b), and 51.1009(f); *see also* U.S. EPA, ''Emissions Inventory Guidance for Implementation of Ozone [and Particulate Matter] National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations,'' available at *http://www.epa.gov/sites/production/files/2014-10/documents/2014revisedeiguidance_0.pdf.*

[58] 2015 $PM_{2.5}$ Plan, SJV Appendix B, pp. B–23 to B–29.

[59] *Id.* at B–31.

[60] *Id.* at B–27.

[61] *Id.* At B–20, B–21.

TABLE 1—SAN JOAQUIN VALLEY ANNUAL AVERAGE EMISSIONS INVENTORY FOR DIRECT $PM_{2.5}$ AND $PM_{2.5}$ PRECURSORS FOR THE 2012 BASE YEAR

[Tons/day]

	Direct $PM_{2.5}$	NO_X	SO_X	VOC	Ammonia
Stationary Sources	8.8	38.3	6.9	99.2	13.6
Area Sources	44.1	8.2	0.3	152.1	311.2
On-Road Mobile Sources	7.3	198.0	0.6	54.0	4.7
Off-Road Mobile Sources	5.9	87.7	0.2	35.3	0.0
Total	66.0	332.2	8.1	340.7	329.5

Source: 2015 $PM_{2.5}$ Plan, Appendix B, Tables B–1 to B–5.

TABLE 2—SAN JOAQUIN VALLEY WINTER DAILY AVERAGE EMISSIONS INVENTORY FOR DIRECT $PM_{2.5}$ AND $PM_{2.5}$ PRECURSORS FOR THE 2012 BASE YEAR

[Tons/day]

	Direct $PM_{2.5}$	NO_X	SO_X	VOC	Ammonia
Stationary Sources	8.5	34.6	6.6	98.7	13.5
Area Sources	40.7	11.7	0.5	156.5	291.8
On-Road Mobile Sources	7.3	204.1	0.6	55.6	4.7
Off-Road Mobile Sources	4.6	68.0	0.2	26.8	0.0
Total	61.0	318.5	7.9	337.5	310.0

Source: 2015 $PM_{2.5}$ Plan, Appendix B, Tables B–1 to B–5.

3. EPA's Evaluation and Proposed Action

The inventories in the 2015 $PM_{2.5}$ Plan are based on the most current and accurate information available to the State and District at the time the Plan and its inventories were being developed in 2014 and 2015, including the latest version of California's mobile source emissions model, EMFAC2014.[62] The inventories comprehensively address all source categories in the SJV and were developed consistent with the EPA's inventory guidance. For these reasons, we are proposing to approve the 2012 base year emissions inventory in the 2015 $PM_{2.5}$ Plan as meeting the requirements of CAA section 172(c)(3). We are also proposing to find that the baseline inventories in the Plan provide an adequate basis for the BACM, MSM, impracticability, RFP, and attainment demonstrations in the 2015 $PM_{2.5}$ Plan.

B. Adequate Monitoring Network

We discuss the adequacy of the monitoring network in this preamble to support our finding that the plan appropriately evaluates the $PM_{2.5}$ challenges in the San Joaquin Valley. Reliable ambient data is necessary to validate the base year air quality modeling which in turn is necessary to assure sound attainment demonstrations.

Section 110(a)(2)(B)(i) of the CAA requires states to establish and operate air monitoring networks to compile data on ambient air quality for all criteria pollutants. Our regulations in 40 CFR part 58 establish specific requirements for operating air quality surveillance networks to measure ambient concentrations of $PM_{2.5}$, including requirements for measurement methods, network design, quality assurance procedures, and in the case of large urban areas, the minimum number of monitoring sites designated as State and Local Air Monitoring Stations (SLAMS). A good spatial distribution of sites, correct siting, and quality-assured and quality-controlled data are the most important factors we consider when evaluating the monitoring network for air quality modeling.

Under 40 CFR part 58, states are required to submit Annual Network Plans (ANPs) for ambient air monitoring networks for approval by the EPA. The most recent ANP, entitled ''2014 Air Monitoring Network Plan,'' summarizes the state of the ambient air monitoring network in the San Joaquin Valley as it operated from January 2013 through May 2014.[63] During this time, there were 20 monitoring sites operated by either the District or CARB that collected $PM_{2.5}$ data, including 14 monitors designated as SLAMS, ten monitors designated as special purpose monitors (SPMs), four supplemental speciation monitors, and eight non-regulatory monitors.[64] On June 16, 2015, the EPA approved those portions of the State's and District's 2014 Air Monitoring Network Plan that pertain to the adequacy of the network for $PM_{2.5}$ monitoring purposes.[65]

Similarly, the District's previous ANP, entitled ''Annual Air Monitoring Network Plan, June 25, 2013,'' summarizes the state of the ambient air monitoring network in the San Joaquin Valley as it operated from January 2012 through March 2013.[66] During this time, there were 21 monitoring sites operated by either the District or CARB that collected $PM_{2.5}$ data, including 14 monitors designated as SLAMS, 12 monitors designated as special purpose monitors (SPMs), two supplemental speciation monitors, and eight non-regulatory monitors.[67] On May 8, 2014, the EPA approved those portions of the State's and District's 2014 Air Monitoring Network Plan that pertain to the adequacy of the network for $PM_{2.5}$ monitoring purposes.[68]

In sum, the $PM_{2.5}$ monitoring network operated by the District and CARB from January 2012 through May 2014 is adequate to support the air quality modeling in the 2015 $PM_{2.5}$ Plan.

[62] CARB submitted the EMFAC2014 model to the EPA on May 21, 2015 and EPA recently approved that model for use in California SIPs. 80 FR 77337 (December 14, 2015).

[63] SJVAPCD, ''2014 Air Monitoring Network Plan,'' January 28, 2015.

[64] *Id.,* Table 17, p. 25 and Table 19, p. 27.

[65] Letter dated June 16, 2015, from Meredith Kurpius, Manager, EPA Region 9, Air Quality Analysis Office, to Sheraz Gill, Director of Strategies and Incentives, SJVUAPCD.

[66] SJVAPCD, ''Annual Air Monitoring Network Plan,'' June 25, 2013.

[67] SJVAPCD, ''Annual Air Monitoring Network Plan,'' June 25, 2013, Tables 15–17, pp. 25–32.

[68] Letter dated May 8, 2014, from Meredith Kurpius, Manager, EPA Region 9, Air Quality Analysis Office, to Sheraz Gill, Director of Strategies and Incentives, SJVUAPCD.

C. $PM_{2.5}$ Precursors

1. Requirements for the Control of $PM_{2.5}$ Precursors

The composition of $PM_{2.5}$ is complex and highly variable due in part to the large contribution of secondary $PM_{2.5}$ to total fine particle mass in most locations, and to the complexity of secondary particle formation processes. A large number of possible chemical reactions, often non-linear in nature, can convert gaseous SO_2, NO_X, VOC, and ammonia to $PM_{2.5}$, making them precursors to $PM_{2.5}$.[69] Formation of secondary $PM_{2.5}$ may also depend on atmospheric conditions, including solar radiation, temperature, and relative humidity, and the interactions of precursors with preexisting particles and with cloud or fog droplets.[70]

The 2007 $PM_{2.5}$ Implementation Rule contained rebuttable presumptions concerning the four $PM_{2.5}$ precursors applicable to attainment plans and control measures related to those plans. *See* 40 CFR 51.1002(c). Although the rule included presumptions that states should address SO_2 and NO_X emissions in their attainment plans, it also included presumptions that regulation of VOCs and ammonia was not necessary. Specifically, in 40 CFR 51.1002(c), the EPA provided, among other things, that a state was ''not required to address VOC [and ammonia] as . . . $PM_{2.5}$ attainment plan precursor[s] and to evaluate sources of VOC [and ammonia] emissions in the state for control measures,'' unless the state or the EPA provided an appropriate technical demonstration showing that emissions from sources of these pollutants ''significantly contribute'' to $PM_{2.5}$ concentrations in the nonattainment area.[71]

In *NRDC,* however, the DC Circuit remanded the EPA's 2007 $PM_{2.5}$ Implementation Rule in its entirety, including the presumptions concerning VOC and ammonia in 40 CFR 51.1002.[72] Although the court expressly declined to decide the specific challenge to these presumptions concerning precursors,[73] the court cited CAA section 189(e)[74] to support its observation that ''[a]mmonia is a precursor to fine particulate matter, making it a precursor to both $PM_{2.5}$ and PM_{10}'' and that ''[f]or a PM_{10} nonattainment area governed by subpart 4, a precursor is presumptively regulated.''[75] Consistent with the *NRDC* decision, the EPA now interprets the Act to require that under subpart 4, a state must evaluate all $PM_{2.5}$ precursors for regulation unless, for any given $PM_{2.5}$ precursor, it demonstrates to the Administrator's satisfaction that such precursor does not contribute significantly to $PM_{2.5}$ levels which exceed the NAAQS in the nonattainment area.

The provisions of subpart 4 do not define the term ''precursor'' for purposes of $PM_{2.5}$, nor do they explicitly require the control of any specifically identified particulate matter (PM) precursor. The statutory definition of ''air pollutant,'' however, provides that the term ''includes any precursors to the formation of any air pollutant, to the extent the Administrator has identified such precursor or precursors for the particular purpose for which the term 'air pollutant' is used.'' CAA section 302(g). The EPA has identified SO_2, NO_X, VOC, and ammonia as precursors to the formation of $PM_{2.5}$. Accordingly, the attainment plan requirements of subpart 4 apply to emissions of all four precursor pollutants and direct $PM_{2.5}$ from all types of stationary, area, and mobile sources, except as otherwise provided in the Act (*e.g.,* CAA section 189(e)).

Section 189(e) of the Act requires that the control requirements for major stationary sources of direct PM_{10} also apply to major stationary sources of PM_{10} precursors, except where the Administrator determines that such sources do not contribute significantly to PM_{10} levels that exceed the standard in the area. Section 189(e) contains the only express exception to the control requirements under subpart 4 (*e.g.,* requirements for reasonably available control measures (RACM) and reasonably available control technology (RACT), best available control measures (BACM) and best available control technology (BACT), most stringent measures (MSM), and new source review (NSR)) for sources of direct $PM_{2.5}$ and $PM_{2.5}$ precursor emissions. Although section 189(e) explicitly addresses only major stationary sources, the EPA interprets the Act as authorizing it also to determine, under appropriate circumstances, that regulation of specific $PM_{2.5}$ precursors from other source categories in a given nonattainment area is not necessary. For example, under the EPA's longstanding interpretation of the control requirements that apply to stationary, area, and mobile sources of PM_{10} precursors area-wide under CAA section 172(c)(1) and subpart 4,[76] a state may demonstrate in a SIP submission that control of a certain precursor pollutant is not necessary in light of its insignificant contribution to ambient PM_{10} levels in the nonattainment area.[77]

We are evaluating the 2015 $PM_{2.5}$ Plan in accordance with the presumption embodied within subpart 4 that all $PM_{2.5}$ precursors must be addressed in the State's evaluation of potential control measures, unless the State adequately demonstrates that emissions of a particular precursor or precursors do not contribute significantly to ambient $PM_{2.5}$ levels that exceed the $PM_{2.5}$ NAAQS in the nonattainment area. In reviewing any determination by the State to exclude a $PM_{2.5}$ precursor from the required evaluation of potential control measures, we consider both the magnitude of the precursor's contribution to ambient $PM_{2.5}$ concentrations in the nonattainment area and the sensitivity of ambient $PM_{2.5}$ concentrations in the area to reductions in emissions of that precursor.

2. Evaluation of Precursors in the 2015 $PM_{2.5}$ Plan

In the 2015 $PM_{2.5}$ Plan, the State and District identify NO_X and SO_X as the precursors that are the focus of its control strategy to attain the 1997 $PM_{2.5}$ standards in the San Joaquin Valley.[78] Although no technical demonstration is necessary to support a conclusion consistent with the statutory requirement to regulate specific $PM_{2.5}$ precursors under subpart 4, the 2015 $PM_{2.5}$ Plan nevertheless provides supporting evidence describing the effectiveness of NO_X and SO_X emission controls.[79] By contrast, the 2015 $PM_{2.5}$ Plan includes statements that further

[69] EPA, Air Quality Criteria for Particulate Matter (EPA/600/P–99/002aF, October 2004), Chapter 3.

[70] EPA, Regulatory Impact Analysis for the Final Revisions to the National Ambient Air Quality Standards for Particulate Matter (EPA/452/R–12–005, December 2012), p. 2–1.

[71] 40 CFR 51.1002(c)(3), (4). *See also* 2007 $PM_{2.5}$ Implementation Rule, 72 FR 20586 at 20589–97 (April 25, 2007).

[72] *NRDC* v. *EPA,* 706 F.3d 428 (D.C. Cir. 2013).

[73] *Id.* at 437, n. 10.

[74] Section 189(e) of the CAA states that ''[t]he control requirements applicable under plans in effect under this part for major stationary sources of PM_{10} shall also apply to major stationary sources of PM_{10} precursors, except where the Administrator determines that such sources do not contribute significantly to PM_{10} levels which exceed the standard in the area.''

[75] 706 F.3d at 436, n. 7 (D.C. Cir. 2013).

[76] General Preamble, 57 FR 13498 at 13539–42 (April 16, 1992).

[77] Courts have upheld this approach to the requirements of subpart 4 for PM_{10}. *See, e.g., Assoc. of Irritated Residents* v. *EPA, et al.,* 423 F.3d 989 (9th Cir. 2005).

[78] This identification is made in the 2015 $PM_{2.5}$ Plan, WOEA, p. A–3. *See also* Chapter 2 (''$PM_{2.5}$ Trends and Challenges in the San Joaquin Valley''), for more regarding the State and District's analysis that NO_X is a significant precursor (p. 2–8), and that VOC and ammonia are insignificant precursors (pp. 2–19 and 2–27, respectively).

[79] 2015 $PM_{2.5}$ Plan, Chapter 2, p. 2–24 and Figure 2–19, p. 2–26 (for NO_X) and SJV Appendix A, p. A–47 (for SO_X).

reductions in VOC and ammonia emissions would not contribute to attainment of the 1997 $PM_{2.5}$ NAAQS in the area [80] and provides CARB's and SJVUAPCD's analyses to support these positions.

CARB and the SJVUAPCD base these conclusions on various air quality monitoring and modeling studies, modeling done by CARB for the 2008 $PM_{2.5}$ Plan and for the 2012 plan for attaining the 2006 $PM_{2.5}$ standard in the SJV (''2012 $PM_{2.5}$ Plan''), and other technical information. We discuss below the technical bases provided in the 2015 $PM_{2.5}$ Plan to support these positions with respect to SO_2, NO_X, VOC, and ammonia, as well as EPA's analyses of this information. For more detail on EPA's analyses, please refer to section II of our ''General Technical Support Document for EPA's Proposed Rule on the 2015 $PM_{2.5}$ Plan for the San Joaquin Valley for the 1997 $PM_{2.5}$ NAAQS,'' January 2016 (''General TSD'').

a. SO_2

The 2015 $PM_{2.5}$ Plan recognizes that emissions of SO_2 contribute significantly to ambient $PM_{2.5}$ levels in the San Joaquin Valley, and that ambient $PM_{2.5}$ concentrations are sensitive to reductions in SO_2. It shows the measured contribution of SO_2 emissions to ambient $PM_{2.5}$ concentrations in pie charts portraying the contribution of various pollutant species. For 2010–2012, depending on location, the three-year annual average $PM_{2.5}$ chemical composition was 11–14% ammonium sulfate, while for 2011–2013, the three-year average high day $PM_{2.5}$ chemical composition was 4–6% ammonium sulfate.[81] The Plan further describes the formation of ammonium sulfate as SO_X-limited, given that ammonia is about 80 times more abundant than SO_X for both annual and winter average emission inventories.[82] The ammonium sulfate contribution levels are substantial, particularly with respect to the annual average concentration, although smaller than the contributions of some other $PM_{2.5}$ components (*i.e.,* ammonium nitrate and organic matter).

Ambient $PM_{2.5}$ sensitivity to reductions of SO_2 emissions is also presented in the 2015 $PM_{2.5}$ Plan in the form of modeling results. The results from the sensitivity modeling are cited and discussed below in the NO_X subsection. The 2015 $PM_{2.5}$ Plan infers from the modeling that there is an ambient $PM_{2.5}$ concentration decrease of 0.08 μg/m³ at the projected design value monitoring site in 2019 (Bakersfield-California) per ton of SO_2 reduction in the SJV area.[83] While the 2019 winter average emissions inventory for SO_X (7.6 tpd) is much smaller than that for NO_X (208.0 tpd) in the SJV, the 0.08 μg/m³ $PM_{2.5}$ decrease per ton of emissions reduction is the same for SO_2 as it is for NO_X.[84] Even though the relatively small SO_2 contribution to ambient $PM_{2.5}$ concentrations may leave less scope for reductions, the sensitivity of ambient $PM_{2.5}$ to SO_2 emission reductions indicates that SO_2 emissions contribute significantly to $PM_{2.5}$ levels above the standards in the SJV area.

Based on the technical analyses provided in the Plan, the EPA agrees with the State's and District's conclusion that SO_2 controls must be included in the evaluation of potential control measures for the 1997 $PM_{2.5}$ standards in the SJV, consistent with the requirements of subpart 4.

b. NO_X

The 2015 $PM_{2.5}$ Plan recognizes that emissions of NO_X contribute significantly to ambient $PM_{2.5}$ levels in the San Joaquin Valley, and that ambient $PM_{2.5}$ concentrations are sensitive to reductions in NO_X. The Plan discusses NO_X in conjunction with ammonia, because these precursors react together to create ammonium nitrate, the largest component of ambient $PM_{2.5}$ particles by species in the SJV.[85] The chemical products of ammonia and NO_X (ammonium and nitrate) combine in a 1:1 molecular ratio, but as discussed below, this ratio does not mean that emissions controls for the two precursor pollutants would be equally effective at reducing ambient $PM_{2.5}$. The Plan provides several forms of evidence to indicate that reductions in NO_X emissions are effective in reducing $PM_{2.5}$ concentrations exceeding the standard, and also that they are more effective than reductions in ammonia emissions. The evidence includes speciated data from ambient $PM_{2.5}$ monitors, model simulations of NO_X emission reductions, historical trends, and the relative amounts of NO_X and ammonia.

The 2015 $PM_{2.5}$ Plan indicates that the ambient contribution of NO_X to $PM_{2.5}$ levels in the SJV is substantial. According to available speciation data, ammonium nitrate is the largest chemical component of ambient $PM_{2.5}$ in the SJV, as measured in the southern (Bakersfield), central (Fresno), and northern (Modesto) portions of San Joaquin Valley. It comprises 38–41% of the 2010–2012 average annual $PM_{2.5}$ concentrations and 53–64% of the 2011–2013 average peak 24-hour $PM_{2.5}$ concentrations, the highest percentages being observed in Bakersfield.[86] Using the 2011–2013 annual average $PM_{2.5}$ design value of 17.3 μg/m³ at the Bakersfield-Planz site,[87] the ammonium nitrate concentration is approximately 7.1 μg/m³. If only nitrate itself is considered (*i.e.,* the nitrate part of the ammonium nitrate molecules), the contribution of NO_X represents 5.5 μg/m³, which is approximately 31.8% of the annual average $PM_{2.5}$ concentration.[88]

Similarly, using the 2011–2013 24-hour $PM_{2.5}$ design value of 64.6 μg/m³ at the Bakersfield-California site,[89] the 24-hour average ammonium nitrate

[80] 2015 $PM_{2.5}$ Plan, Chapter 2, p. 2–19.

[81] 2015 $PM_{2.5}$ Plan, WOEA, Figures 6 and 7, respectively, p. A–16. *See also* 2015 $PM_{2.5}$ Plan, Appendix F, Figure F–2, pp. F–8 to F–9, which shows how ammonium sulfate has decreased slightly at three of the four monitoring sites from the 2004–2006 period to the 2011–2013 period.

[82] 2015 $PM_{2.5}$ Plan, WOEA, p. A–41. This is on a molar or mass-equivalent basis: there are 80 times as many ammonia molecules emitted as would be required to combine with all the emitted SO_2 molecules to form ammonium sulfate, accounting for the emissions in tons per day, the molecular masses, and the chemical formula for ammonium sulfate.

[83] 2015 $PM_{2.5}$ Plan, WOEA, p. A–27.

[84] *Id. See also,* 2015 $PM_{2.5}$ Plan, Appendix B, pp. B–8 and B–11.

[85] 2015 $PM_{2.5}$ Plan, WOEA, Figures 6 and 7, p. A–16.

[86] *Id.*

[87] 2015 $PM_{2.5}$ Plan, Appendix A, p. A–9. The design value for the Bakersfield-Planz site for 2011–2013 is given as a rounded value of 17.0 μg/m³ in Table A–6 in Appendix A of the Plan. For greater precision in estimating species contributions, we have used the unrounded value of 17.3 μg/m³, which we calculated as the average of the 98th percentiles values for each year (14.5, 14.7, and 22.8) as listed in Appendix A, Table A–5. We used the Bakersfield-Planz site (the second highest 2011–2013 annual average) in lieu of the Madera-City site (highest average), consistent with the Plan's weight of evidence for the attainment demonstration. Similarly consistent with the attainment demonstration, this 17.3 μg/m3 value excludes the data from May 5, 2013 for Bakersfield-Planz. Section V.E.5 of this proposed rule has further discussion of these matters. For calculating the ammonium nitrate concentration, we used the 41% value from the Bakersfield pie chart in the 2015 $PM_{2.5}$ Plan, WOEA, Figure 6, p. A–16.

[88] The nitrate fraction of ammonia nitrate (5.5 μg/m³) is calculated as molecular weight of nitrate (62) divided by the molecular weight of ammonium nitrate (80) and equals 77.5 percent.

[89] 2015 $PM_{2.5}$ Plan, Appendix A, p. A–8. The design value for Bakersfield-California (the high site for monitors with complete data for the three years) for 2011–2013 is given as a rounded value of 65 μg/m³ in Table A–4 in Appendix A of the Plan. For greater precision in estimating species contributions, we have used the unrounded value of 64.6 μg/m³, which we calculated as the average of the 98th percentiles values for each year (65.5, 56.4, and 71.8) as listed in Table A–3. For calculating the ammonium nitrate concentration, we used the 64% value from the Bakersfield pie chart in the 2015 $PM_{2.5}$ Plan, WOEA, Figure 7, p. A–16.

concentration on peak $PM_{2.5}$ days is approximately 41.3 μg/m³. If only nitrate itself is considered (*i.e.,* the nitrate part of the ammonium nitrate molecules), the contribution of NO_X represents 32.0 μg/m³, which is approximately 49.6% of the average peak 24-hour $PM_{2.5}$ concentration. Whether considered as ammonium nitrate or simply as nitrate, NO_X is clearly a significant contributor to ambient $PM_{2.5}$ levels above the standard in the SJV.

In addition to this evidence concerning the contribution of NO_X to $PM_{2.5}$ concentrations, the 2015 $PM_{2.5}$ Plan provides evidence that ambient $PM_{2.5}$ concentrations are sensitive to NO_X reductions (*i.e.,* nitrate $PM_{2.5}$ concentrations decrease when NO_X emissions are reduced). The evidence is from modeling, historical trends, and relative proportions of NO_X and ammonia. The 2015 $PM_{2.5}$ Plan provides evidence from past and current photochemical modeling simulations that ambient ammonium nitrate is sensitive to NO_X reductions. The Plan describes past modeling studies that were documented in academic journals.[90] In the various studies, when NO_X emissions were reduced by 50%, ambient ammonium nitrate decreased by 25–50%, depending on the episode modeled and the geographic location.[91] In addition, modeling for the 2012 $PM_{2.5}$ Plan for the 2006 24-hour $PM_{2.5}$ NAAQS, whose results were relied on for the 2015 $PM_{2.5}$ Plan, also shows substantial sensitivity of ambient $PM_{2.5}$ concentrations to reductions in NO_X emissions. The State modeled the effect of a 25% reduction in NO_X emissions on ambient 24-hour $PM_{2.5}$ concentrations in 2019 and combined this with the emission mass (tons per day) to determine that the $PM_{2.5}$ concentrations would be reduced by 0.08 μg/m3 at the Bakersfield-California site (the design value site for 2019) and decreases of a similar order of magnitude (*i.e.,* 0.03 to 0.09 μg/m3) at other monitors in the SJV.[92]

The 2015 $PM_{2.5}$ Plan provides additional (non-modeling) evidence on the effectiveness of NO_X reductions. The historical downward trends of NO_X emissions and of ambient nitrate concentrations are discussed in Chapter 2 and the weight of evidence analysis (WOEA) of the Plan.[93] Annual average NO_X emissions levels are plotted against ammonium nitrate concentrations at Bakersfield and Fresno, and in each case have decreased by about 35–40% from 2004 to 2012.[94] This shows that NO_X emissions and ammonium nitrate concentrations are correlated with one another. The conclusion that $PM_{2.5}$ nitrate concentrations are more limited by NO_X emissions than by ammonia emissions is strengthened by the fact that this reduction in ambient ammonium nitrate occurred despite an increase in emissions of ammonia, the other precursor to ammonium nitrate, during the same period.[95]

The 2015 $PM_{2.5}$ Plan further describes the effectiveness of NO_X controls by characterizing it as the ''limiting precursor'' in ammonium nitrate formation, based on the relative amounts of NO_X and ammonia. Based on monitored concentrations and the emissions inventory, CARB and the SJVUAPCD conclude that NO_X is the limiting precursor and briefly illustrates this concept in its WOEA.[96] One molecule each of NO_X and ammonia is required to form each molecule of ammonium nitrate. If NO_X is in short supply relative to ammonia, then NO_X is the limiting factor in ammonium nitrate formation.[97]

The WOEA analysis includes plots [98] of ammonia and nitric acid (which contains nitrate) concentrations at two monitoring sites in the SJV (Angiola, a rural site, and Fresno, an urban site) that were measured during the winter 2000–2001 CRPAQS [99] study and reported in Lurmann *et al.* (2006).[100] CARB notes that in this study, ammonia concentrations are at least an order of magnitude larger than those of nitrate and notes Lurmann *et al.*'s conclusion that NO_X is the limiting precursor. CARB and the SJVUAPCD did not, however, present more current information about ammonia concentrations.

The WOEA also considers emissions inventories to support the argument that NO_X is the limiting precursor. The WOEA normalized NO_X emissions using the relative molecular weights of NO_X and ammonia, in order to reflect the number of molecules of each available to react with each other.[101] In 2012, the normalized amount of NO_X available was 37–38% of the amount of ammonia for both annual and winter averages, while it is projected to be 21% of the amount of ammonia in 2020. This shows the scarcity of NO_X relative to ammonia and implies that NO_X is the limiting precursor in the formation of ammonium nitrate.

Based on the range of technical analyses provided in the Plan and other information available to the EPA, we agree with the State's and District's conclusion that NO_X controls must be included in the evaluation of potential control measures for the 1997 $PM_{2.5}$ standards in the SJV, consistent with the requirements of subpart 4.

c. Ammonia

The 2015 $PM_{2.5}$ Plan states that, based on modeling, emissions inventory, and monitoring studies, ''[b]ecause of [the] regional surplus in ammonia, even substantial ammonia emissions reductions yield a relatively small reduction in nitrate'' [102] and ''[a]mmonia emission reductions are approximately an order of magnitude less effective'' than NO_X emission reductions in reducing ambient $PM_{2.5}$

[90] The academic journal papers are described in 2015 $PM_{2.5}$ Plan, WOEA, Section 5 (''Secondary Ammonium Nitrate Formation''), pp. A–23–A–29.

[91] Chen, J., Lu, J., Avise, J.C., DaMassa, J.A., Kleeman, M.J., Kaduwela, A.P., 2014, Seasonal Modeling of $PM_{2.5}$ in California's San Joaquin Valley, Atmospheric Environment, 92, 182–190, doi:10.1016/j.atmosenv.2014.04.030. Kleeman, M.J., Ying, Q., and Kaduwela, A., Control strategies for the reduction of airborne particulate nitrate in California's San Joaquin Valley, Atmospheric Environment, 2005, 39, 5325–5341. Liang, J., Gürer, K., Allen, P.D., Zhang, K.M., Ying, Q., Kleeman, M., Wexler, A., and Kaduwela, A., 2006, A photochemical model investigation of an extended winter PM episode observed in Central California: Model Performance Evaluation, Proceedings of the 5th Annual CMAQ Models-3 User's Conference, Chapel Hill, NC. Livingstone, P.L. *et. al.,* 2009, ''Simulating PM Concentrations During a Winter Episode in a Subtropical Valley and Sensitivity Simulations and Evaluation methods'', Atmospheric Environment, 43: 5971–5977. doi:10.1016/j.atmosenv.2009.07.033. Pun, B.K., Balmori R.T.F, and Seigneur, C., 2009, Modeling wintertime particulate matter formation in Central California, Atmospheric Environment, 43, 402–409. Different models and emission inventories in these studies conducted over the years also contribute to the variation in results.

[92] 2015 $PM_{2.5}$ Plan, WOEA, Table B–2 (''Modeled $PM_{2.5}$ air quality benefit per ton of valley-wide precursor emission reductions''), p. A–27.

[93] 2015 $PM_{2.5}$ Plan, Chapter 2, pp. 2–8 and 2–9; and CARB's Staff Report, Appendix A (*i.e.,* WOEA), pp. A–60 to A–61.

[94] 2015 $PM_{2.5}$ Plan, Chapter 2, Figure 2–19, p. 2–26; 2015 $PM_{2.5}$ Plan, CARB Staff Report, pp. 5–6; and WOEA, Figure 44, p. A–60.

[95] 2015 $PM_{2.5}$ Plan, Chapter 2, p. 2–24.

[96] 2015 $PM_{2.5}$ Plan, WOEA, section 5.b, pp. A–18 to A–19. *See also* 2015 p.m.2.5 Plan, Chapter 2, section 2.6, pp. 2–18 to 2–27.

[97] As noted below in the ammonia subsection, the ''limiting precursor'' concept is not absolute, and must be used with caution. However, for NO_X it does support evidence from the modeling results that NO_X significantly contributes to exceedances of the 1997 $PM_{2.5}$ NAAQS.

[98] 2015 $PM_{2.5}$ Plan, WOEA, Figures 11 and 12, pp. A–21 to A–22.

[99] CRPAQS is the California Regional Particulate Air Quality Study. More information is available about CRPAQS at *http://www.arb.ca.gov/airways/ccaqs.htm.*

[100] Lurmann, F.W., Brown, S.G., McCarthy, M.C., and Roberts, P.T., December 2006, Processes Influencing Secondary Aerosol Formation in the San Joaquin Valley during Winter, Journal of Air and Waste Management Association, 56, 1679–1693.

[101] WOEA, Table 1, p. A–20.

[102] 2015 $PM_{2.5}$ Plan, Chapter 2, p. 2–19.

concentrations.[103] To support this finding, CARB and the SJVUAPCD discuss the ambient contribution of ammonia to measured $PM_{2.5}$ levels in the SJV and the sensitivity of ambient $PM_{2.5}$ to ammonia reductions. The latter includes discussion of the relative abundance of NO_X and ammonia, and of modeled simulations of further reductions in ammonia emissions.

The Plan indicates that ammonia contributes to ambient concentrations of $PM_{2.5}$, in the form of ammonium nitrate and ammonium sulfate. As noted above in our discussion of NO_X, ammonium nitrate comprises 38–41% of the 2010–2012 average annual $PM_{2.5}$ concentrations and 53–64% of the 2011–2013 average peak 24-hour $PM_{2.5}$ concentrations, the highest percentages being observed in Bakersfield.[104] Ammonium sulfate contributes an additional 11–14% of the 2010–2012 average annual $PM_{2.5}$ concentrations and 4–6% of the 2011–2013 average peak 24-hour $PM_{2.5}$ concentrations, with the highest percentages similarly being observed in Bakersfield.[105]

Using the highest 2011–2013 annual average $PM_{2.5}$ design value of 17.3 μg/m³ at the Bakersfield-Planz site, the ammonium nitrate concentration is approximately 7.1 μg/m³ and the ammonium sulfate concentration is approximately 2.4 μg/m³.[106] If only ammonium is considered (*i.e.,* the ammonium part of the ammonium nitrate and ammonium sulfate molecules), the contribution of ammonium represents 2.3 μg/m³, or 13.0% of the annual average $PM_{2.5}$ concentration.[107]

Similarly, using the 2011–2013 24-hour $PM_{2.5}$ design value of 64.6 μg/m³ at the Bakersfield-California site, the 24-hour average ammonium nitrate concentration on peak $PM_{2.5}$ days is approximately 41.3 μg/m³ and the ammonium sulfate concentration is approximately 3.9 μg/m³.[108] If only ammonium itself is considered (*i.e.,* the ammonium part of the ammonium nitrate and ammonium sulfate molecules), the contribution of ammonium represents 10.4 μg/m³, which is approximately 16.0% of the average peak 24-hour $PM_{2.5}$ concentration.[109]

Ammonia emissions are essential to the formation of both of these components of the ambient particulate matter, and the EPA finds that these levels of contribution are a substantial fraction of the SJV's 2011–2013 annual average design value of 17.3 μg/m³, as measured at the Bakersfield-Planz site, and the 24-hour design value of 64.6 μg/m³, as measured at the Bakersfield-California site. This is evidence that emissions of ammonia contribute significantly to ambient $PM_{2.5}$ concentrations that exceed the 1997 $PM_{2.5}$ NAAQS in the SJV.

Next we examined information in the 2015 $PM_{2.5}$ Plan regarding the sensitivity of ambient $PM_{2.5}$ levels in the SJV to potential ammonia emission control. On this issue there is conflicting evidence. Based on evidence that ammonia appears not to be the limiting precursor for ammonium nitrate formation and that modeled ammonia reductions are ineffective relative to NO_X reductions,[110] CARB and the SJVUAPCD conclude that controls for ammonia are not warranted. However, the EPA's own evaluation of the modeling indicates that ammonia controls can be effective at reducing ambient $PM_{2.5}$ in some locations and can be more effective at certain times of year.

CARB and the SJVUAPCD 's evidence discussed above to support the argument that NO_X is the limiting precursor for ammonia nitrate formation is also presented as evidence that ammonia is *not* the limiting precursor, and thus to argue that ambient $PM_{2.5}$ levels would not be sensitive to ammonia reductions.[111] In the Plan, CARB and the SJVUAPCD state that there is both an abundance of ambient ammonia relative to ambient nitrate, and an abundance of ammonia emissions relative to NO_X emissions. CARB and the SJVUAPCD also indicate that there is an abundance of gaseous ammonia relative to particulate ammonium at multiple locations during the 2000–2001 winter episode in the CRPAQS study,[112] so that even under conditions favorable to ammonium nitrate formation, a substantial amount of unreacted ammonia remains.[113] Based on these multiple pieces of evidence on the abundance of ammonia, CARB and the SJVUAPCD conclude that ammonia is not the limiting factor for ammonium nitrate formation and, thus, that reducing ammonia emissions would not reduce ambient $PM_{2.5}$ in the SJV.

CARB and the SJVUAPCD also considered air quality modeling analyses to evaluate the effectiveness of reducing ammonia as compared to other precursors, and to $PM_{2.5}$ decreases needed for attainment. Based on modeling a 25% reduction in ammonia emissions, holding direct $PM_{2.5}$ and other precursor emissions constant, the Plan states that per ton per day of ammonia emissions reduction, there would be a 0.005 to 0.010 μg/m³ decrease in ambient $PM_{2.5}$ concentrations across the Valley, including a 0.008 μg/m³ effect at the Bakersfield-California site.[114] By comparing these sensitivities to the effect of a 25% reduction of NO_X emissions, the Plan states that, on a per ton basis, reducing ammonia is only about 10% as effective as reducing NO_X.[115] Thus, based on this air quality modeling, CARB and the SJVUAPCD conclude that additional ammonia control is considerably less effective than NO_X control.

The State and District assume in the 2015 $PM_{2.5}$ Plan that additional ammonia control, as modeled, would provide limited benefit for attainment planning purposes. They also conclude, based upon the various forms of information and analyses described above, that ammonia emission reductions are much less effective than direct $PM_{2.5}$ or NO_X emission reductions, and thus argue that ''[a]mmonia is not a significant precursor to $PM_{2.5}$ values in the Valley.'' [116]

The EPA finds the modeling and other analyses presented and referred to in the 2015 $PM_{2.5}$ Plan to be credible, but the modeling analyses nonetheless show

[103] WOEA, p. A–29.

[104] 2015 $PM_{2.5}$ Plan, WOEA, Figures 6 and 7, p. A–16.

[105] *Id.*

[106] *See* n. 87 *supra.* In addition, for calculating the ammonium sulfate concentration, we used the 14% ammonium sulfate values from the Bakersfield pie chart in the 2015 $PM_{2.5}$ Plan, WOEA, Figure 6, p. A–16.

[107] The ammonium fraction of ammonium nitrate (1.6 μg/m³) is calculated as the molecular weight of ammonium (18) divided by the molecular weight of ammonium nitrate (80), which is 22.5 percent of the mass. The ammonium fraction of ammonium sulfate (0.7 μg/m³) is calculated as the molecular weight of the two ammonium molecules (36) divided by the molecular weight of ammonium sulfate (132), which is 27.3 percent of the mass.

[108] *See* n. 89 *supra.* In addition, for calculating the ammonium sulfate concentration, we used the 6% ammonium sulfate values from the Bakersfield pie chart in the 2015 $PM_{2.5}$ Plan, WOEA, Figure 6, p. A–16.

[109] The ammonium fraction of ammonium nitrate (9.3 μg/m³) is calculated as the molecular weight of ammonium (18) divided by the molecular weight of ammonium nitrate (80), which is 22.5 percent of the mass. The ammonium fraction of ammonium sulfate (1.1 μg/m³) is calculated as the molecular weight of the two ammonium molecules (36) divided by the molecular weight of ammonium sulfate (132), which is 27.3 percent of the mass.

[110] 2015 $PM_{2.5}$ Plan, Chapter 2, Section 2.6.2, pp. 2–21 to 2–27 and WOEA, pp. A–23 to A–29.

[111] WOEA, pp. A–18 to A–22.

[112] WOEA, pp. A–22 and Figure 13, p. A–23.

[113] As noted above, NO_X emissions have been decreasing and ammonia emissions increasing, so under the State's reasoning, this relationship would be expected to continue.

[114] WOEA, Table 2, p. A–27.

[115] 2015 $PM_{2.5}$ Plan, Chapter 2, p. 27.

[116] 2015 $PM_{2.5}$ Plan, Chapter 2, p. 2–27.

that additional reductions in ammonia may reduce ambient $PM_{2.5}$ levels to varying degrees. In the various studies, when ammonia emissions were reduced by up to 50%, ambient ammonium nitrate decreased by a range of approximately 5–25%, depending on the episode modeled and the geographic location evaluated.[117] Modeling conducted by ARB staff for the 2012 $PM_{2.5}$ Plan for attaining the 2006 24-hour $PM_{2.5}$ NAAQS indicated that for emissions reduction within Kern County, a one ton per day decrease in ammonia would lead to a 0.02 μg/m^3 improvement in the $PM_{2.5}$ 24-hour design value.[118] If this rate were to remain constant as ammonia emissions decrease, and if this same sensitivity applied to valley-wide reductions, it would mean that a 50% reduction in the ammonia emissions inventory (estimated in the 2015 $PM_{2.5}$ Plan at 329.5 tpd annual average in 2012) would be expected to reduce 24-hour $PM_{2.5}$ concentrations by more than 3 μg/m^3, an amount that the EPA would not consider insignificant.

The percentages for ammonia benefits are generally smaller than those for NO_X reductions, but a range of modeling results show that reductions in ammonia emissions under certain circumstances can effectively help to reduce ambient $PM_{2.5}$. The fact that all the modeling studies find at least some benefit from ammonia control shows that the concept of NO_X as a ''limiting precursor'' in the formation of ammonium nitrate particles discussed above is not absolute. In addition, the test for determining whether emission reduction measures for a particular precursor must be evaluated for purposes of timely attainment should not be based exclusively on the control effectiveness of the precursor relative to other precursors, but must also consider whether emissions of the precursor ''contribute significantly'' to ambient $PM_{2.5}$ levels which exceed the $PM_{2.5}$ standards in the nonattainment area. In other words, the fact that control of NO_X may be more important than the control of ammonia in relative terms does not mean that a state should not evaluate regulations for both as part of a comprehensive plan to attain the $PM_{2.5}$ NAAQS, and to do so expeditiously as required by the CAA.

Taking into consideration a number of factors, the EPA does not agree with the conclusion in the Plan that the more than 100,000 annual tons of ammonia emissions from sources in the SJV area do not contribute significantly to $PM_{2.5}$ levels exceeding the 1997 $PM_{2.5}$ NAAQS. First, the information provided by the State and District in the Plan shows that ammonia contributes to a large fraction of measured $PM_{2.5}$ concentrations in the SJV area, in the form of ammonium nitrate and, to a lesser extent, ammonium sulfate. Based on data presented in the 2015 $PM_{2.5}$ Plan, ammonia emissions, in the form of ammonium, are responsible for approximately 13% of the annual average concentration and 16% of the 24-hour average at the design value site for the San Joaquin Valley.

Second, modeled evidence submitted by the State and studies available to the EPA indicate that although ammonia control is less effective at reducing $PM_{2.5}$ concentrations compared to NO_X control, reducing ammonia emissions in the SJV would reduce $PM_{2.5}$ by varying amounts throughout the nonattainment area. Studies indicate that reducing ammonia does not have a uniform effect across a large nonattainment area during all times of the year; ammonia reductions can be more effective at reducing $PM_{2.5}$ concentrations in specific locations during certain times of the year. Reductions in ammonia in conjunction with reductions of direct $PM_{2.5}$, SO_2, and NO_X would help to provide for attainment of the $PM_{2.5}$ NAAQS in the SJV area.

Finally, despite the fact that a broad range of emission reduction measures have been implemented to reduce emissions of direct $PM_{2.5}$ and $PM_{2.5}$ precursors, the Plan also indicates that attainment by the statutory attainment date is impracticable. This underscores the continuing severity of the $PM_{2.5}$ nonattainment problem in the SJV and the need for a robust assessment of potential control measures (*e.g.,* BACM and MSM) for direct $PM_{2.5}$ and $PM_{2.5}$ precursors, including potential ammonia control measures which may be effective in reducing ambient $PM_{2.5}$ concentrations.

Given the severity of the $PM_{2.5}$ nonattainment problem in the SJV, the high degree to which controls have already been applied to the emission of $PM_{2.5}$ and its precursor pollutants, the demonstration that attainment in the SJV by 2015 is impracticable, and the documentation in the 2015 $PM_{2.5}$ Plan showing that ammonia emissions are responsible for more than 2 μg/m^3 of the annual average $PM_{2.5}$ concentration at the Bakersfield-Planz site, and for more than 10 μg/m^3 of the peak day 24-hour average $PM_{2.5}$ concentration at the Bakersfield-California site, the EPA does not agree at this time with the conclusion in the Plan that ammonia emissions do not contribute significantly to $PM_{2.5}$ levels exceeding the $PM_{2.5}$ standards in the SJV.

Although the Plan states that ammonia is not a significant precursor to ambient $PM_{2.5}$ levels, and that additional controls for ammonia are not necessary to attain the $PM_{2.5}$ standards in the SJV, the Plan nonetheless provides an evaluation of control measures currently implemented in the SJV that reduce ammonia emissions and other potential ammonia control measures. We discuss the State's ammonia control evaluation in section V.D. of this proposed rule.

d. VOC

The 2015 $PM_{2.5}$ Plan states that VOCs are not a significant precursor to ambient $PM_{2.5}$ levels in the San Joaquin Valley and that further reductions in VOC emissions would not contribute to $PM_{2.5}$ attainment. To support this finding, CARB and the SJVUAPCD discuss the ambient contribution of VOC to measured $PM_{2.5}$ levels in the SJV, the indirect role of VOC in ammonium nitrate formation, and modeled simulations of further reductions in VOC emissions.

There are two routes by which VOC can contribute to ambient $PM_{2.5}$. The first is through various chemical reactions leading to the formation of Secondary Organic Aerosols (SOA). The second is through photochemical reactions that create oxidants such as ozone and the hydroxyl radical (OH), which in turn oxidize NO_X emissions to nitrate or SO_X emissions to sulfate, leading to the formation of particulate ammonium nitrate or particulate ammonium sulfate. Chapter 2 of the 2015 $PM_{2.5}$ Plan discusses both roles of VOC in $PM_{2.5}$ formation,[119] as does the Plan's weight of evidence analysis.[120]

For the direct contribution of VOC to $PM_{2.5}$, the 2015 $PM_{2.5}$ Plan states that modeling for annual average $PM_{2.5}$ for the 2008 $PM_{2.5}$ Plan found that anthropogenic SOA were about 3–5% of total organic aerosol, and that SOA were mainly formed during the summer from non-anthropogenic sources.[121] The SJVUAPCD states that the winter anthropogenic contribution that is of interest for the 1997 24-hour $PM_{2.5}$ NAAQS would necessarily be lower because less SOA forms at winter temperatures, which are lower than temperatures for the annual average. CARB and the SJVUAPCD also cite a

[117] WOEA, pp. A–24 to A–25.

[118] WOEA, p. A–29.

[119] 2015 $PM_{2.5}$ Plan, Chapter 2, pp. 2–20 to 2–21.

[120] WOEA, section 5.d (''Role of VOC in ammonium nitrate formation''), pp. A–30 to A–39, and section 6 (''Secondary Organic Aerosol Formation''), pp. A–39 to A–40.

[121] 2015 $PM_{2.5}$ Plan, Chapter 2, p. 2–20.

study by Chen *et al.*[122] for the winter 2000–2001 CRPAQS episode. This study found that the SOA portion of total organic aerosol had a maximum value of 4.26 μg/m^3 with concentrations at Bakersfield of 2.28 μg/m^3 and at Fresno of 2.46 μg/m^3, which represent 4% and 6% of the total organic aerosol at those locations. These locations typically represent the highest $PM_{2.5}$ concentrations for the southern and central portions of the San Joaquin Valley.

Applying this roughly 5% SOA proportion to the organic carbon portion of the measured 2011–2013 peak day 24-hour average $PM_{2.5}$ composition shows that, by mass, SOA is about 0.9% of total ambient $PM_{2.5}$ at Bakersfield-California and 1.5% of ambient $PM_{2.5}$ at Fresno.[123] The EPA notes that because anthropogenic SOA is only a portion of the total SOA, the portion due to controllable anthropogenic sources would be even less. CARB and the SJVUAPCD conclude that these modeling studies show that SOA is not a substantial component of peak day (*i.e.,* winter) 24-hour ambient $PM_{2.5}$ concentrations in the SJV and that the potential for reducing ambient $PM_{2.5}$ through VOC emission reductions is very limited. We do not have comparable information at this time to evaluate whether or not SOA is a substantial component of annual average $PM_{2.5}$ concentrations.

For the indirect contribution of VOC to $PM_{2.5}$, nitrate formation via daytime photochemistry, CARB and the SJVUAPCD assert that this route is also not a substantial contributor, based on modeled sensitivity to VOC reductions. For one such study there were relatively low modeled concentrations of ozone, which did not appear consistent with nitrate formation via daytime oxidant (ozone) photochemistry, which would be expected to have elevated ozone levels.[124] The Plan reviews essentially the same studies that the State relied on in the 2008 $PM_{2.5}$ Plan for attainment of the 1997 $PM_{2.5}$ standards,[125] except for one additional 2014 study by Chen *et. al.*[126] The EPA's review of these studies and of the 2008 $PM_{2.5}$ Plan's examination of the studies is covered in the technical support document (TSD) for the EPA's final action on the 2008 $PM_{2.5}$ Plan (''2008 $PM_{2.5}$ Plan TSD'').[127] The 2014 Chen *et. al.* paper presented results of modeling the 1st and 4th quarters of 2007 using the CMAQ model (the same period and model that was used for the 2008 $PM_{2.5}$ Plan), and also of modeling the winter 2000 CRPAQS episode using the UCD/CIT (University of California, Davis/California Institute of Technology) model. The paper explored the sensitivity of $PM_{2.5}$ to reductions of the various precursors. The CMAQ modeling showed that reducing anthropogenic VOC actually increases $PM_{2.5}$ design values, while the UCD/CIT modeling showed that it has a negligible effect. NO_X vs. VOC isopleth diagrams from the paper are reproduced in the 2015 $PM_{2.5}$ Plan, and illustrate these effects.[128]

The findings from those reviews remain the same for the current Plan: Past modeling studies vary on whether controlling VOC reduces $PM_{2.5}$, but the most reliable ones show VOC control has little benefit, or even a disbenefit. As detailed in the EPA's 2008 $PM_{2.5}$ Plan TSD and in the Plan's WOEA,[129] the studies for which VOC control showed a benefit at some times and places are less reliable because they used unrealistic emissions levels, unrealistic control scenarios, or the effect occurred at $PM_{2.5}$ concentrations no longer reached in the SJV. The WOEA also suggests that, in this context of indirect $PM_{2.5}$ formation from VOC, the model boundary conditions have sufficient ozone flowing in from outside the SJV area,[130] implying that VOC reductions would have little effect on ambient $PM_{2.5}$ levels exceeding the standard in the SJV.

The overall conclusion is that the effect of reducing VOC emissions is somewhat uncertain, but in general produces little benefit or even a disbenefit in $PM_{2.5}$ concentrations.

The modeling for the prior 2012 $PM_{2.5}$ Plan, which indicates a disbenefit from controlling VOC at important geographic locations, adds to the evidence from past studies, and is incorporated into the 2015 $PM_{2.5}$ Plan. This is shown by negative $PM_{2.5}$ sensitivities (that is, decreased VOC emissions result in increased $PM_{2.5}$ levels) for multiple locations.[131] In addition, a diagram of model $PM_{2.5}$ response at the Bakersfield-California site to various combinations of NO_X and VOC reductions show graphically that VOC reductions increase $PM_{2.5}$, for any given level of NO_X.[132] For other monitoring sites, such as Fresno and Angiola, these NO_X vs. VOC diagrams show mixed effects on $PM_{2.5}$, albeit generally of small magnitude, depending on the level of ambient $PM_{2.5}$ as VOC emissions are reduced.

The 2015 $PM_{2.5}$ Plan includes additional VOC vs. NO_X isopleth diagrams from a 2005 Kleeman *et al.* paper.[133] The key ones show that the effect of reducing VOC for all sources increases total $PM_{2.5}$ nitrate for any

[122] Chen, J., Ying, Q., and Kleeman, M.J., 2010, Source apportionment of wintertime secondary organic aerosol during the California regional PM_{10}/$PM_{2.5}$ air quality study, Atmospheric Environment, 44(10), 1331–1340.

[123] The contribution of Organic Matter to 2011–2013 peak day 24-hour $PM_{2.5}$ levels was 18 percent at Bakersfield and 30 percent at Fresno (*see* WOEA, Figure 7, p. A–16). Five percent of these proportions gives 0.90 percent SOA at Bakersfield and 1.5 percent SOA at Fresno. As a fraction of the 2013 design values of 64.6 μg/m^3 at Bakersfield-California and 63.5 μg/m^3 at Fresno-Winery, these percentages give SOA contributions of 0.58 μg/m^3 at Bakersfield-California and 0.95 μg/m^3 at Fresno-Winery.

[124] Pun, B.K., Balmori R.T.F, and Seigneur, C., 2009, Modeling Wintertime Particulate Matter Formation in Central California, Atmospheric Environment, 43: 402–409. doi: 10.1016/j.atmosenv.2008.08.040.

[125] 2015 $PM_{2.5}$ Plan, Chapter 2, pp. 2–20 to 2–21; WOEA, p. A–3, and section 5.d, pp. A–30 to A–39.

[126] Chen, J., Lu, J., Avise, J.C., DaMassa, J.A., Kleeman, M.J., Kaduwela, A.P., 2014, Seasonal Modeling of $PM_{2.5}$ in California's San Joaquin Valley, Atmospheric Environment, 92, 182–190, doi: 10.1016/j.atmosenv.2014.04.030.

[127] EPA Region 9, ''Technical Support Document and Responses to Comments Final Rule on the San Joaquin Valley 2008 $PM_{2.5}$ State Implementation Plan,'' September 30, 2011, section II.C.

[128] WOEA, p. A–37 to A–38, Figs. 23 and 24. $PM_{2.5}$ increases when VOC decreases, for any given level of NO_X.

[129] WOEA, p. A–3, and section 5.d, pp. A–30 to A–39.

[130] WOEA, p. A–38. *See also,* Kleeman, M.K., Ying, Q., and Kaduwela, A., 2005, Control strategies for the reduction of airborne particulate nitrate in California's San Joaquin Valley, Atmospheric Environment, 39: 5325–5341 September 2005. doi: 10.1016/j.atmosenv.2005.05.044; cited in Plan Modeling Protocol.p.F–36). A similar statement is made in the 2014 Chen *et al.* paper, citing Qi Ying, Jin Lu, Michael Kleeman, Modeling air quality during the California Regional PM_{10}/$PM_{2.5}$ Air Quality Study (CPRAQS) using the UCD/CIT source-oriented air quality model—Part III. Regional source apportionment of secondary and total airborne particulate matter, Atmospheric Environment, Volume 43, Issue 2, January 2009, Pages 419–430, ISSN 1352–2310, DOI: 10.1016/j.atmosenv.2008.08.033. The Chen paper actually cites ''Part I'' of the Ying paper, not this Part III. However, none of these papers gives the basis for the statement that background ozone is the dominant nitrate oxidant.

[131] WOEA, Table 2, p. A–27 (*see* VOC columns for Bakersfield, Visalia, and Corcoran).

[132] WOEA, Figure 18, p. A–28. This diagram shows the model $PM_{2.5}$ response at the Bakersfield-California site to reductions in various combinations of precursors. Subfigure ''b)'' shows NO_X reductions plotted against VOC reductions. For a given level of NO_X, in decreasing VOC by moving leftward along a horizontal line (representing constant NO_X), one crosses the lines of constant $PM_{2.5}$ (isopleths) into regions of increased $PM_{2.5}$. The 2012 $PM_{2.5}$ Plan presents similar diagrams for the various monitoring sites. 2012 $PM_{2.5}$ Plan, Chapter 4, Figures 4–15 through 4–2334, pp. 4–31 to 4–40.

[133] Kleeman, M.K., Ying, Q., and Kaduwela, A., 2005, ''Control strategies for the reduction of airborne particulate nitrate in California's San Joaquin Valley'', Atmospheric Environment, 39: 5325–5341 September 2005. doi: 10.1016/j.atmosenv.2005.05.044. This paper was discussed in our TSD for the 2008 $PM_{2.5}$ Plan, though the 2008 $PM_{2.5}$ Plan did not include the diagrams.

given level of NO_X emissions.[134] The Plan states that the VOC disbenefit occurs because reducing VOCs can reduce the organic nitrate ''sink'' that makes nitrate unavailable, thus freeing it for ammonium nitrate formation.[135]

In sum, the information provided by the State and District in the Plan indicates that: (a) Wintertime levels of secondary organic aerosol measured in the SJV are low and therefore the *direct* products of VOC emissions do not contribute significantly to $PM_{2.5}$ levels above the standard in the SJV; and (b) wintertime reductions in VOC emissions in the SJV, when $PM_{2.5}$ concentrations are high, would not reduce ambient $PM_{2.5}$ levels, and therefore the *indirect* products of VOC emissions also do not contribute significantly to $PM_{2.5}$ levels above the standard in the SJV. Based on this information, we propose to determine that, at this time, VOC emissions do not contribute significantly to ambient $PM_{2.5}$ levels that exceed the 1997 $PM_{2.5}$ NAAQS in the SJV nonattainment area.

e. Recommendations for Further Analyses

The EPA believes that several precursor issues warrant further explanation and exploration in future $PM_{2.5}$ plans. For ammonia, an explanation should be provided for the apparent conflict between NO_X as a ''limiting'' precursor for ammonium nitrate formation and modeling that nevertheless shows some benefits from ammonia emission reductions. In the 2012 $PM_{2.5}$ Plan, ammonia reductions for Kern County alone were simulated along with reductions for the area as a whole. Further exploration of the effect of more specific localized controls would inform decisions on whether ammonia controls should be part of the control strategy in the next $PM_{2.5}$ plan.

For VOC, the apparent conflict between different past modeling studies on whether VOC emission reductions are beneficial or not also should be more fully explained. As mentioned above, and discussed further in the EPA's TSD for the 2012 $PM_{2.5}$ Plan,[136] those studies showing a VOC benefit can be discounted on various grounds, but there does not appear to be a full explanation of the chemistry differences seen. Differences between the models used, their chemical mechanisms, their emissions and meteorological inputs, and the episodes they are applied to all cause differences in study results. Without a fuller reconciliation of those results, it is difficult to know whether or not chemistry sensitive to VOC reductions could still be operating today in the SJV. Also mentioned above, the Plan's WOEA asserts that background ozone levels are sufficient to provide the oxidants needed for nitrate formation, even without the VOC-mediated generation of ozone within the SJV.[137] But little support has been provided for this assertion, other than similar assertions in a few journal papers. More concrete evidence on this issue should be provided in future plans.

A related issue is why a VOC disbenefit occurs. One explanation is that VOC can remove nitrate via a ''sink'' reaction to organic nitrates, so reducing VOC frees nitrate to form $PM_{2.5}$. This explanation is provided in a journal paper posing the nitrate sink as a possibility in PM chemistry. While this is plausible, no evidence has been provided from any studies during the ten years since the paper was published that this particular phenomenon is actually occurring in the SJV modeling or atmosphere. Some of these issues may be resolved through better documentation and explanation in the SIP submission of what is already known; others may require quantitative examination of particular chemical pathways in the modeling or ambient measurements.

Evaluation of the available research and its implications for the effectiveness of various precursor emissions controls would also be useful as part of the next plan. This research includes projects funded by the San Joaquin Valley-wide Air Pollution Study Agency, including ''Improve emission estimates for urban ammonia sources,'' ''Update of CRPAQS conceptual model and synthesis of results,'' and ''Develop Improvements to the $PM_{2.5}$ Inventory to Better Reconcile with Ambient Measurements.'' The CARB Staff Report refers to several recent field studies relevant for the SJV, including ARCTAS–CARB, CalNex2010, and DISCOVER–AQ, all of which should be examined for their implications for the SJV's atmospheric chemistry and the effectiveness of various precursor emissions controls.

Some results from the CalNex study are already available in a Synthesis document.[138] While CalNex was conducted during the summer of 2010, some of its findings may be relevant for $PM_{2.5}$ formation in the SJV, even though such formation is greatest in winter. Finding I2b (pp. 63–64) suggests that the SJV ammonia inventory is underestimated by a factor of three; if confirmed, this may have implications for modeling, the effectiveness of ammonia controls, and the amount of NO_X used in the Plan to offset the ammonia inventory increases. Finding I3 (p. 65) highlights ammonia reactions with carboxylic acids and the resulting enhancement of secondary organic aerosol (SOA); the importance of this pathway in modeling winter $PM_{2.5}$ may need to be explored. Several other findings relate to SOA. Finding L2 (p. 75) stated significant SOA formation at night at Bakersfield. Finding N2 (p. 86) stated SOA as 72% of Bakersfield ultra-fine particulate matter (*i.e.,* PM less than 1 micrometer in diameter) (this contrasts with the 5% of $PM_{2.5}$ used in the Plan), and also stated that SOA dominated daytime particle growth. Findings W3a and W3b (p. 129) stated the importance of anthropogenic VOC as the main SOA precursor, and nitrate as a VOC oxidant. While many of these findings may be relevant mostly for summer conditions, their implications for chemical pathways and controls in winter should be examined.

3. Proposed Action

Based on a review of the information provided in the 2015 $PM_{2.5}$ Plan and other information available to the EPA, we propose to determine that at this time VOC emissions do not contribute significantly to ambient $PM_{2.5}$ levels which exceed the 1997 annual and 24-hour $PM_{2.5}$ NAAQS in the SJV and, therefore, that VOCs may be excluded from the State's evaluation of potential control measures for purposes of these standards in this area. Consistent with the statutory requirements under subpart 4, all other $PM_{2.5}$ precursors (*i.e.,* NO_X, SO_2, and ammonia) must be included in the State's evaluation of potential control measures for the 1997 $PM_{2.5}$ NAAQS in the SJV area, including nonattainment NSR provisions to

[134] WOEA, upper left quadrant of Figures 19 to 21, pp. A–32 to A–34.

[135] WOEA, pp. A–31, citing. Z. Meng, D. Dabdub, and J. H. Seinfeld, ''Chemical Coupling Between Atmospheric Ozone and Particulate Matter'', Science 277, 116 (1997); DOI: 10.1126/science.277.5322.116. The Meng paper cites the organic nitrate sink as a possibility in PM chemistry. The Plan provides no direct evidence that this reaction is important in the SJV, though it is plausible.

[136] EPA Region 9, ''Technical Support Document, Proposed Action on the San Joaquin Valley 2012 $PM_{2.5}$ State Implementation Plan and 2014 Supplemental Document and Proposed Reclassification of the San Joaquin Valley as Serious Nonattainment for the 2006 $PM_{2.5}$ Standard,'' December 2014.

[137] WOEA, p. A–38.

[138] Synthesis of Policy Relevant Findings from the CalNex 2010 Field Study (California Research at the Nexus of Air Quality and Climate Change): Final Report to the Research Division of the California Air Resources Board, David D. Parrish, NOAA Earth System Research Laboratory, March 27, 2014. Available at *http://www.esrl.noaa.gov/csd/projects/calnex/.*

implement the requirements of subpart 4.[139] We discuss the State's evaluation of potential control measures for NO_X, SO_2, and ammonia, as well as direct $PM_{2.5}$, in section V.D. of this proposed rule.

D. Best Available Control Measures and Most Stringent Measures

As discussed in section IV.B of this proposed rule, section 189(b)(1)(B) of the Act requires for any serious $PM_{2.5}$ nonattainment area that the State submit provisions to assure that the best available control measures (BACM) for reducing emissions of $PM_{2.5}$ and $PM_{2.5}$ precursors will be implemented no later than four years after the date the area is reclassified as a serious area. Because the EPA reclassified the SJV area as Serious nonattainment for the 1997 $PM_{2.5}$ NAAQS effective May 7, 2015, the date four years after reclassification is May 7, 2019. In this case, however, the Serious area attainment date for the SJV area under section 188(c) is no later than December 31, 2015, and to qualify for an extension of this date under section 188(e) the State must, among other things, demonstrate attainment by the most expeditious alternative date practicable. Given these circumstances, we are evaluating the Plan's control strategy for implementation of BACM as expeditiously as practicable.[140]

In addition, before the EPA may extend the attainment date for a Serious nonattainment area under CAA section 188(e), the State must, among other things, demonstrate to the satisfaction of the Administrator that the plan for the area includes the most stringent measures that are included in the implementation plan of any State or are achieved in practice in any State, and can feasibly be implemented in the area (MSM). As discussed above, we have established a process for evaluating BACM in serious area plans and a similar process for evaluating MSM. Because of the substantial overlap in the source categories and controls evaluated for BACM and those evaluated for MSM, we present our evaluation of the 2015 $PM_{2.5}$ Plan's provisions for including MSM alongside our evaluation of the Plan's provisions for implementing BACM for each identified source category. We provide a more detailed evaluation of many of the District's control measures for stationary and area sources in our ''Technical Support Document for the EPA's Evaluation of Fine Particulate Matter Best Available Control Measures and Most Stringent Measures for the San Joaquin Valley Air Pollution Control District,'' January 2016 (''SJV Rules TSD'').

1. Identifying the Sources of $PM_{2.5}$ and $PM_{2.5}$ Precursors

The first step in determining BACM and MSM is to develop a detailed emissions inventory of the sources of direct $PM_{2.5}$ and $PM_{2.5}$ precursors that can be used with modeling to determine the effects of these sources on ambient $PM_{2.5}$ levels. The EPA's past guidance on Serious area plans in the Addendum suggested that the second step is to use modeling to identify those source categories that have a greater than *de minimis* impact on ambient $PM_{2.5}$ concentrations.[141]

As discussed in section V.A of this proposed rule, Appendix B of the 2015 $PM_{2.5}$ Plan contains the planning inventories for direct $PM_{2.5}$ and all $PM_{2.5}$ precursors (NO_X, SO_2, VOC, and ammonia) for the SJV $PM_{2.5}$ nonattainment area together with documentation to support these inventories. The District used available speciation data to identify *de minimis* thresholds, also referred to in the Plan as ''significant emission levels,'' for direct $PM_{2.5}$, NO_X, and SO_X.[142] Based on these thresholds, which are described in Chapter 5 of the Plan, the District identified the following six source categories as emission sources in the SJV that emit pollutants at levels exceeding its selected *de minimis* thresholds (*i.e.,* ''significant'' source categories):

1. Open Burning;
2. Glass Melting Furnaces;
3. Agricultural Conservation Management Practices;
4. Commercial Charbroiling;
5. Wood Burning Fireplaces and Wood Burning Heaters; and
6. Paved and Unpaved Roads.[143]

CARB identified most mobile source categories as ''significant'' and identified only several (*e.g.,* cargo handling equipment, motorcycles, recreational boats, off-road recreational vehicles and commercial harbor craft) as *de minimis* source categories.[144]

Separately in Appendix C and Appendix D of the Plan, however, both CARB and the District identified all of the sources of direct $PM_{2.5}$, NO_X, SO_X and ammonia in the SJV that are subject to State or District emission control measures and provided their evaluations of these regulations for compliance with BACM and MSM requirements. Table 3 identifies the source categories in SJV that are under State and District jurisdiction, each source category's 2012 emissions of direct $PM_{2.5}$, NO_X, and SO_X in tons per day (tpd), and, for each source category, the regulations that the State and District have relied on in the Plan to satisfy BACM and MSM requirements.

TABLE 3—2015 $PM_{2.5}$ PLAN—SOURCE CATEGORIES EVALUATED FOR BACM AND MSM

Source category	Rule No. (if any) *	2012 $PM_{2.5}$ (tpd)	2012 NO_X (tpd)	2012 SO_X (tpd)
Stationary and Area Source Categories under District Jurisdiction				
Open Burning	4103	2.27	1.61	0.05
Reduction of Animal Matter	4104	0.03	0.00	0.00
Prescribed Burning and Hazard Reduction Burning	4106	0.76	0.07	0.03
Particulate Matter Emissions from the Incineration of Combustible Refuse	4203	0.00	0.00	0.00
Cotton Gins	4204	0.22	0.00	0.00
Fuel Burning Equipment	4301	N/A	N/A	N/A

[139] Absent a demonstration to EPA's satisfaction that major stationary sources of ammonia emissions do not contribute significantly to ambient $PM_{2.5}$ levels that exceed the NAAQS in the SJV area, under CAA section 189(e) major stationary sources of ammonia are subject to the control requirements that apply to major stationary sources of direct $PM_{2.5}$, including nonattainment NSR requirements. We intend to evaluate the adequacy of the District's nonattainment NSR program for $PM_{2.5}$ upon submission of the NSR SIP revision due May 7, 2016, which is the date 12 months after EPA's reclassification of the SJV as Serious nonattainment for the 1997 $PM_{2.5}$ NAAQS became effective. 80 FR 18528 (April 7, 2015).

[140] CAA section 189(b)(1)(B) establishes an outermost deadline (''no later than four years after the date the area is reclassified'') and does not preclude an earlier implementation deadline for BACM where necessary to satisfy the attainment requirements of the Act.

[141] Addendum at 42012.

[142] 2015 $PM_{2.5}$ Plan, Chapter 5, section 5.4 (''De Minimis Thresholds for Determining Significant Source Categories'').

[143] *Id.* at Table 5–2 (''Valley Source Category De Minimis Determinations (using 2012 data)'').

[144] 2015 $PM_{2.5}$ Plan at Appendix D.

TABLE 3—2015 $PM_{2.5}$ PLAN—SOURCE CATEGORIES EVALUATED FOR BACM AND MSM—Continued

Source category	Rule No. (if any) *	2012 $PM_{2.5}$ (tpd)	2012 NO_X (tpd)	2012 SO_X (tpd)
Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr	4306/4320	1.27	1.93	0.60
Boilers, Steam Generators, and Process Heaters—2.0 to 5.0 MMBtu	4307	0.32	0.49	0.15
Boilers, Steam Generators, and Process Heaters—0.075 to less than 2.0 MMBtu	4308	0.61	0.92	0.28
Dryers, Dehydrators, and Ovens	4309	0.85	0.20	0.47
Flares	4311	0.16	0.56	0.33
Lime Kilns	4313	0.00	0.00	0.00
Solid Fuel Fired Boilers, Steam Generators, and Process Heaters	4352	0.62	2.69	0.56
Glass Melting Furnaces	4354	0.33	6.04	1.96
Conservation Management Practices	4550			
• Tilling Dust	.....	5.17	0.00	0.00
• Harvest Operations Dust	.....	7.28	0.00	0.00
• Dust from Ag Lands (non-pasture)	.....	6.15	0.00	0.00
• Dust from Pasture Lands	.....	1.09	0.00	0.00
Commercial Charbroiling	4692	2.84	0.00	0.00
Internal Combustion Engines	4702	0.49	13.06	0.12
Stationary Gas Turbines	4703	1.22	3.09	0.22
Sulfuric Acid Mist	4802	0.00	0.00	0.75
Wood Burning Fireplaces and Wood Burning Heaters	4901	4.48	0.50	0.08
Residential Water Heaters	4902	0.21	2.21	0.06
Natural Gas-Fired, Fan-Type Central Furnaces	4905	0.20	2.46	0.06
General Requirements	8011	N/A	N/A	N/A
Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities	8021	1.46	0.00	0.00
Bulk Materials	8031	0.04	0.00	0.00
Carryout and Trackout (emission included in Paved and Unpaved Roads, Rule 8061, below)	8041	N/A	N/A	N/A
Open Areas	8051	0.34	0.00	0.00
Paved and Unpaved Roads	8061	7.59	0.00	0.00
Unpaved Vehicle/Equipment Traffic Areas	8071	0.59	0.00	0.00
Agricultural Sources	8081	1.21	0.00	0.00
Lawn and Garden Equipment	SC 001	0.04	0.58	0.00
Energy Efficiency	SC 002	N/A	N/A	N/A
Fireworks	SC 003	N/A	N/A	N/A
Sand and Gravel Operations	SC 004	0.09	0.00	0.00
Asphalt/Concrete Operations (Mineral Processes)	SC 005	0.82	0.20	0.36
Almond Hulling/Shelling Operations	SC 006	0.38	0.00	0.00
Pistachio Hulling/Shelling Operations (emissions included in Almond Hulling/Shelling above)	SC 007	N/A	N/A	N/A
Agricultural Material Screening/Shaking Operations (emissions included in other control categories)	SC 008	N/A	N/A	N/A
Tub Grinding (emissions included in IC engines, Rule 4702, fugitive emissions accounted for in stationary and area inventory)	SC 009	N/A	N/A	N/A
Abrasive Blasting	SC 010	0.33	0.00	0.00
Mobile Source Categories under State Jurisdiction				
Light- and Medium-Duty Vehicles	(**)	1.9	32.2	(***)
Heavy-Duty Vehicles	(**)	4.8	138.6	(***)
Off-Road Vehicles and Engines (excludes Cargo Handling Equipment)	(**)	1.1	19.2	(***)
Farm Equipment	(**)	2.9	50.4	(***)
Cargo Handling Equipment	(**)	0.0	0.1	(***)
Other Mobile Sources	(**)	.....	.....	(***)
• Motorcycles	.....	0.0	1.0	
• Recreational Boats	.....	0.4	1.6	
• Off-Road Recreational Vehicles	.....	0.0	0.1	
• Commercial Harbor Craft	.....	0.0	0.7	

Source: 2015 $PM_{2.5}$ Plan, Chapter 5, Table 5–2; Appendix C ("BACM and MSM for Stationary Sources"); and Appendix D ("BACM and MSM for Mobile Sources"), except as otherwise noted.

* "SC" refers to a source category that is subject to either several District rules or none.

** *See* 2015 $PM_{2.5}$ Plan, Appendix D for a discussion of the State measures that cover these mobile source categories.

*** *See* 2015 $PM_{2.5}$ Plan, Appendix B (Emissions Inventory) for SO_X emission levels.

With respect to ammonia, the District states in Appendix C of the 2015 $PM_{2.5}$ Plan that ammonia is an "insignificant" $PM_{2.5}$ precursor in the SJV but also provides an analysis of several SIP-approved District regulations that control ammonia emissions.[145] We provide our evaluation of these regulations below and further in the EPA's SJV Rules TSD.

Because the State and District have evaluated a much larger set of emission sources than those identified as "significant" sources in the Plan, and because the District's evaluation of *de minimis* thresholds entirely excludes consideration of ammonia emission

[145] 2015 $PM_{2.5}$ Plan, Appendix C, at pp. C–239 to C–280.

sources, the EPA is not proposing any action with respect to the District's selected *de minimis* thresholds for BACM and MSM purposes. Instead, based on the Plan's more comprehensive evaluation of State and District regulations that apply to stationary, area, and mobile sources of direct $PM_{2.5}$, NO_X, SO_X and ammonia in the SJV, we propose to find that the 2015 $PM_{2.5}$ Plan appropriately identifies all emission sources and source categories that must be subject to evaluation for potential control measures consistent with the requirements of subpart 4.

2. Identification and Implementation of BACM and MSM

As part of its process for identifying candidate BACM and MSM and considering the technical and economic feasibility of additional control measures, CARB and the District reviewed the EPA's guidance documents on BACM, guidance documents on control measures for direct $PM_{2.5}$, NO_X, and SO_X emission sources, and control measures implemented in other ozone and $PM_{2.5}$ nonattainment areas in California and other states. The State's and District's evaluations of potential BACM and MSM for each source category identified in Table 3 above is found in Appendix C and Appendix D of the 2015 $PM_{2.5}$ Plan. In the following sections, we review key components of the State's and District's demonstrations concerning BACM and MSM for sources of direct $PM_{2.5}$, NO_X, SO_X and ammonia emissions in the SJV. We provide a more detailed evaluation of the District's regulations in the EPA's SJV Rules TSD, together with recommendations for improvements to these rules.

Based on our evaluation of these State and District demonstrations, we propose to determine that the 2015 $PM_{2.5}$ Plan provides for the implementation of BACM and MSM for sources of direct $PM_{2.5}$ and $PM_{2.5}$ precursors as expeditiously as practicable, in accordance with the requirements of CAA sections 189(b)(1)(B) and 188(e).

a. District Measures for Stationary and Area Sources

The District's BACM and MSM process is described in the 2015 $PM_{2.5}$ Plan, Chapter 5, section 5.3 (''BACM/MSM Evaluation Process'') and in Appendix C. The District followed a process similar to that used by Arizona in the Maricopa County PM_{10} Serious Area Plan, the only other air quality plan in the nation that includes a BACM and MSM demonstration for purposes of requesting an attainment date extension under CAA section 188(e).[146]

For each identified source category, the District first identified potential control measures included in SIPs for other areas, addressed in federal regulations or guidance (*e.g.,* control technique guidelines (CTGs), alternative control techniques (ACTs), or new source performance standards (NSPSs)), or addressed in state or local regulations or guidance (*e.g.,* Air Toxic Control Measures (ATCMs).[147] The District evaluated these identified potential control measures to determine whether implementation of the measures would be technologically and economically feasible in the SJV.[148] In addition, the District considered other available control options (beyond those included in other SIPs or identified in federal/state regulations or guidance), such as measures that the State or District have previously considered ''beyond RACT'' and measures that have been implemented in practice in other areas. The District also evaluated these potential control measures to determine whether their implementation would be technologically and economically feasible in the SJV. The EPA's SJV Rules TSD provides a more detailed evaluation of many of these District regulations and our recommendations for rule improvements.

Open Burning

SJVUAPCD Rule 4103 (''Open Burning''), as amended April 15, 2010, is designed to minimize impacts of smoke and other air pollutants from open burning of agricultural waste and other materials.[149] The rule restricts the type of materials that may be burned and establishes other conditions and procedures for open burning in conjunction with the District's Smoke Management Program.[150] The EPA approved this rule into the California SIP on January 4, 2012.[151]

The District compared Rule 4103 to several other open burning rules implemented in other parts of California and found no other rules more stringent as a whole than those in Rule 4103. According to the District, although the South Coast Air Quality Management District (SCAQMD) implements a rule that restricts burning on residential wood combustion (RWC) curtailment days (Rule 444) and District Rule 4103 does not contain the same restriction, in practice the District currently bans all burning on RWC curtailment days through implementation of its Smoke Management Program, which specifically allocates allowable burn acreage for 103 geographic zones based on local meteorology.[152] We note that a restriction on burning on RWC curtailment days by itself may not consistently reduce wintertime $PM_{2.5}$ emission levels as it could shift more waste burning activity to days with more favorable meteorology.

Sections 41855.5 and 41855.6 of the California Health and Safety Code require the District to prohibit open burning of specific crop categories unless the District determines either that there is no economically feasible alternative means of eliminating the waste or that there is no long-term federal or state funding commitment for the continued operation of biomass facilities in the SJV or for the development of alternatives to burning.[153] The District has considered the technical and economic feasibility of alternatives to burning several times in the last several years and concluded that such alternatives are not feasible for selected crop categories at this time.[154]

Boilers, Steam Generators, and Process Heaters Greater Than 5.0 MMBtu/hr

SJVUAPCD Rule 4306 (''Boilers, Steam Generators, and Process Heaters—Phase 3''), as amended October 16, 2008, establishes NO_X emission limits ranging from 5 to 30 ppm and related operational requirements for gaseous fuel- or liquid fuel-fired boilers, steam generators, and process heaters with total rated heat input greater than 5 million Btu per hour (MMBtu/hr).[155] The EPA approved Rule 4306 into the California SIP on January 13, 2010.[156] SJVUAPCD Rule 4320 (''Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater Than 5.0 MMBtu/hr''), as adopted October 16, 2008, establishes more stringent NO_X emission limits (5 to 12 ppm) and

[146] 65 FR 19964 (April 13, 2000) (proposed action on Maricopa County Serious Area Plan); 66 FR 50252 (October 2, 2001) (proposed action on Maricopa County Serious Area Plan); and 67 FR 48718 (July 25, 2002) (final action on Maricopa County Serious Area Plan).

[147] 2015 $PM_{2.5}$ Plan, Chapter 5; and Appendix C, pp. C–4 to C–6.

[148] *Id.*

[149] *See generally* SJVUAPCD Rule 4103, as amended April 15, 2010; *see also* 2015 $PM_{2.5}$ Plan, Appendix C at pp. C–14 to C–15.

[150] *Id.*

[151] 77 FR 214 (January 4, 2012).

[152] 2015 $PM_{2.5}$ Plan, Appendix C at pp. C–8 to C–10.

[153] California Health & Safety Code, sections 41855.5 and 41855.6.

[154] 2015 $PM_{2.5}$ Plan, Appendix C, pp. C–8 to C–15.

[155] *See generally* SJVUAPCD Rule 4306, as amended October 16, 2008; *see also* 2015 $PM_{2.5}$ Plan, Appendix C, p. C–35.

[156] 75 FR 1715 (January 13, 2010).

related operational requirements for these units but allows sources to pay an emission fee in lieu of compliance with the NO_X emission limits.[157] The EPA approved Rule 4320 into the California SIP on March 25, 2011 but determined that this rule, as approved, may not be credited for attainment planning purposes because the fee provision renders the NO_X emission limits unenforceable.[158]

The District compared both Rule 4306 and Rule 4320 to several other analogous rules implemented in other parts of California, including the Sacramento metropolitan area, the South Coast, and the Bay Area.[159] According to the District, the NO_X emission limits in Rule 4306 are generally within the same range as, and in some cases are more stringent than, those contained in analogous rules implemented by these other California agencies, except that the SCAQMD implements a rule containing NO_X emission limits that are potentially more stringent for units of certain sizes (SCAQMD Rule 1146, as amended November 1, 2013).[160]

SCAQMD Rule 1146 establishes a 5 ppm NO_X emission limit for larger units (*i.e.,* those with heated rate inputs above 75 MMBtu/hr), whereas Rule 4320 establishes a 7 ppm limit and Rule 4306 establishes a 9 ppm limit for such units.[161] SCAQMD Regulation XX (''Regional Clean Air Incentives Market'' or ''RECLAIM'') also applies to units within the same range of sizes as Rule 4320 but allows sources to comply with emission caps by purchasing RECLAIM Trading Credits.[162] We do not have information about the rated heat input of the units subject to RECLAIM in the South Coast area and therefore cannot conclude that the lower NO_X emission limits for larger boilers in SCAQMD Rule 1146 are technically and economically feasible for implementation in the SJV at this time.

The District also considered the technical and economic feasibility of alternative NO_X and $PM_{2.5}$ control techniques for this source category, such as low temperature oxidation and EM_X system for NO_X control, and alternative fuels, electrostatic precipitators (ESP) and wet scrubbers for direct $PM_{2.5}$ control.[163] Based on its consideration of the technical constraints and costs associated with each of these control options, the District concluded that these additional controls are not feasible for implementation in the SJV at this time.[164]

Although the NO_X emission limits in Rule 4320 do not satisfy the Act's enforceability requirements because of the option to pay an emission fee, we note that the requirement to pay the emission fee itself is an enforceable requirement and that the fee provision appears to function effectively as a pollution deterrent.[165]

Flares

SJVUAPCD Rule 4311 (''Flares''), as amended June 18, 2009, establishes specific operational and administrative requirements to limit emissions of NO_X, SO_X, and VOCs from the operation of flares.[166] Under Rule 4311, for each refinery flare and other flare with a capacity above 5 MMBtu/hr, the operator must submit a flare minimization plan (FMP) to the District describing relevant equipment and preventative measures and demonstrating that the operator appropriately minimized flaring activity.[167] The EPA approved Rule 4311 into the California SIP on November 3, 2011.[168]

The District compared Rule 4311 with several other analogous rules implemented in other parts of California, including the South Coast, Bay Area, Ventura County, and Santa Barbara, all of which require regulated sources to submit FMPs to the local districts.[169] According to the District, most flares in the SJV occur in the oil and gas production industry and operate as emergency control devices, unlike many flares in the South Coast area and the Bay Area, which are significantly larger and operate as part of the refinery process.[170] Because of wide variation in flaring operations in the SJV, the District concludes that requirements to submit details FMPs, as in Rule 4311, are the most effective means of reducing NO_X and SO_X emissions from flaring.[171]

The District also considered the technical and economic feasibility of alternative control techniques for flares, such as maximum monthly flared gas targets and requirements to capture gas before it is flared.[172] Based on its consideration of the technical constraints and costs associated with these control options, the District concluded that these additional controls are not feasible for implementation in the SJV at this time.[173]

Chapter 8 of the 2015 $PM_{2.5}$ Plan includes a commitment by the District to conduct a comprehensive review of submitted FMPs to identify effective flare minimization practices; to evaluate the technical and economic feasibility of implementing new and additional flare minimization practices at affected facilities; to have a draft report available for public review and comment by December 1, 2015; to develop a final report by March 31, 2016 after addressing public comments on these evaluations; and upon completion of these analyses, to work closely with affected operators to ''evaluate and implement, when feasible, the most effective flare minimization practices through the FMP submittal and approval process under Rule 4311.'' [174] The District issued its draft report of FMPs on December 3, 2015, starting a 30-day public comment period.[175]

Solid Fuel-Fired Boilers

SJVUAPCD Rule 4352 (''Solid Fuel-Fired Boilers, Steam Generators, and Process Heaters''), as amended December 15, 2011, establishes NO_X emission limits and related operational requirements for boilers, steam generators, and process heaters that burn municipal solid waste (MSW), biomass, and other solid fuels.[176] Specifically, the rule establishes NO_X emission limits of 165 ppmv for units burning MSW, 90 ppmv for units burning biomass, and 65 ppmv for units burning other solid fuels.[177] The EPA approved this rule into the California SIP on November 6, 2012.[178]

According to the District, the NO_X emission limits in Rule 4352 have been lowered significantly over time and are

[157] *See generally* SJVUAPCD Rule 4320, as adopted October 16, 2008; *see also* 2015 $PM_{2.5}$ Plan, Appendix C, p. C–35.

[158] 76 FR 16696 (March 25, 2011).

[159] 2015 $PM_{2.5}$ Plan, Appendix C, p. C–38.

[160] *Id.*

[161] *Compare* SCAQMD Rule 1146 (as amended November 1, 2013) at section (c)(1)(F) to SJVUAPCD Rule 4320 at Table 1, category B.a and SJVUAPCD Rule 4306 at Table 1, category B; *see also* 2015 $PM_{2.5}$ Plan, Appendix C, p. C–38.

[162] RECLAIM is a market incentive program designed to allow facilities flexibility in achieving emission reduction requirements for NO_X and SO_X through, among other things, add-on controls, equipment modifications, reformulated products, operational changes, shutdowns, and the purchase of excess emission reductions. *See* SCAQMD Rule 2000, section (a).

[163] 2015 $PM_{2.5}$ Plan, Appendix C, p. C–39.

[164] 2015 $PM_{2.5}$ Plan, Appendix C, p. C–42.

[165] *See* section 3.b.5 of the EPA's SJV Rules TSD.

[166] *See generally* SJVUAPCD Rule 4311, as amended June 18, 2009; *see also* 2015 $PM_{2.5}$ Plan, Appendix C, p. C–63.

[167] *Id.*

[168] 76 FR 68106 (November 3, 2011).

[169] 2015 $PM_{2.5}$ Plan, Appendix C, p. C–73.

[170] *Id.*

[171] *Id.*

[172] 2015 $PM_{2.5}$ Plan, Appendix C, p. C–82.

[173] 2015 $PM_{2.5}$ Plan, Appendix C, p. C–84.

[174] *Id.* at Chapter 8, Section 8.1 (pg. 8–2).

[175] SJVUAPCD, ''Draft Further Study, Rule 4311 Flare Minimization Plans, 2015,'' December 3, 2015.

[176] *See generally* SJVUAPCD Rule 4352, as amended December 15, 2011; *see also* 2015 $PM_{2.5}$ Plan, Appendix C, p. C–87.

[177] *Id.*

[178] 77 FR 66548 (November 6, 2012).

at least as stringent as analogous requirements implemented in other parts of California. The District compared the provisions of Rule 4352 to potentially more stringent requirements implemented in Sacramento County, the South Coast area, and the Bay Area, but these comparisons are of limited value because no affected facilities are subject to the Sacramento Metropolitan Air Quality Management District's (SMAQMD) rule, and no sources are currently complying with the 40 ppmv limit in the SCAQMD's or Bay Area Air Quality Management District's (BAAQMD's) rules.[179] Nonetheless, we note that three other air districts in California implement regulations that apply to active biomass-fueled units: Yolo-Solano Air Quality Management District (YSAQMD), El Dorado County Air Quality Management District (EDAQMD) and Placer County Air Pollution Control District (PCAPCD). The NO_X emission limits in these regulations are all within the same range as SJVAPCD's limit of 90 ppm corrected to 3% O_2 on a 24-hour block average.[180]

The District also considered the technical and economic feasibility of alternative control techniques for this source category, such as selective catalytic reduction (SCR) for NO_X control and ESPs or baghouses for direct $PM_{2.5}$ control.[181] Based on its consideration of the costs associated with SCR retrofits at units burning biomass, MSW, or other solid fuels, the District concluded that SCR for these units is not economically feasible for sources in the SJV at this time.[182] With respect to direct $PM_{2.5}$ control, the District states that sources subject to Rule 4352 are subject to permit limits that require the best feasible controls.[183]

We note that biomass- and MSW-fired units provide an environmental benefit by diverting these wastes from landfills and reducing open burning.

Glass Melting Furnaces

SJVUAPCD Rule 4354 (''Glass Melting Furnaces''), as amended May 19, 2011, establishes NO_X, VOC, SO_X, and PM_{10} emission limits and related operational requirements for glass melting furnaces.[184] Specifically, the rule establishes NO_X emission limits of 1.5 to 3.7 lb. NO_X/ton glass, depending on glass product and averaging time, and SO_X emission limits of 0.9 to 1.7 lb. SO_X/ton glass.[185] The EPA approved Rule 4354 into the California SIP on January 31, 2013.[186]

According to the District, the NO_X emission limits in Rule 4354 require implementation of oxy-fuel firing or SCR systems, which are the best available NO_X control techniques, and are at least as stringent as analogous requirements implemented in the South Coast and Bay Area.[187]

We are not aware of prohibitory rules for glass melting furnaces in other areas that are more stringent than Rule 4354. We note that the SCAQMD has found a 1.2 lb./ton NO_X emission limit feasible through a Best Available Retrofit Control Technology (BARCT) determination under its RECLAIM program, but absent information about how affected sources in the South Coast area have complied with the available compliance options under RECLAIM, it is not clear that these lower NO_X emission levels are technically and economically feasible for implementation in the SJV.

Conservation Management Practices

SJVUAPCD Rule 4550 (''Conservation Management Practices''), as adopted August 19, 2004, establishes requirements for owners and operators of agricultural sites to implement conservation management practices (CMPs) to control PM_{10} emissions from on-field crop and animal feeding operations.[188] Under the rule, each owner/operator of an agricultural site must select and implement a CMP for each category of operations, including unpaved roads and unpaved vehicle/equipment traffic areas, and submit a CMP application to the District for its review and approval.[189] The EPA approved this rule into the California SIP on February 14, 2006.[190]

According to the District, Rule 4550 is the most stringent rule of its kind.[191] The District compared the provisions of Rule 4550 to analogous requirements implemented by air agencies in other parts of California (Imperial County, South Coast, and Sacramento County) and in Arizona, and found no requirements more stringent than those in Rule 4550.[192] We note that it is difficult to directly compare the requirements among these rules because of the widely varying rule structures and operations of the affected agricultural sites.

The District also considered the technical and economic feasibility of additional control options for this source category, such as misting to reduce PM_{10} emissions from disking activity and the use of new almond harvesting equipment.[193] As to misting, the District found that the available information was not sufficient to demonstrate that this control technique would achieve its minimum standard of a 10% reduction in PM_{10} emissions, so the District did not add this measure to the CMP list.[194] As to the use of newer almond harvesting equipment, the District noted, based on a 2010–2011 study, that newer equipment would achieve significant PM_{10} emission reductions but found it was not necessary to revise the CMP list given use of newer almond harvesting equipment is already listed under an existing CMP category.[195] Finally, the District considered adding windblown dust controls to Rule 4550 but determined that such controls would not substantially impact $PM_{2.5}$ design values in the SJV because windblown dust events typically occur during the spring and fall seasons whereas the District asserts that $PM_{2.5}$ values are driven by winter-time concentrations; $PM_{2.5}$ values recorded during winter stagnation periods are usually much higher than those recorded during wind events; and the geologic component of peak $PM_{2.5}$ concentration is a fraction of the mass formed by secondary processes and other sources.[196]

Chapter 8 of the 2015 $PM_{2.5}$ Plan includes a commitment by the District to reevaluate Rule 4550, in close coordination with stakeholders (including agricultural industry representatives, CARB, and the EPA), for additional feasible control options; to have a draft report available for public review and comment by May 31, 2016; and to develop a final report by October 15, 2016 after addressing public comments on these evaluations.[197]

Commercial Charbroiling

SJVUAPCD Rule 4692 (''Commercial Charbroiling''), as amended September 17, 2009, establishes control

[179] 2015 $PM_{2.5}$ Plan, Appendix C at p. C–89.

[180] SJV Rules TSD at Section 3.d.2. *See also* 77 FR 66548 (November 6, 2012).

[181] 2015 $PM_{2.5}$ Plan, Appendix C at pp. C–91 to C–101.

[182] 2015 $PM_{2.5}$ Plan, Appendix C at pp. C–95—C–96 and C–98.

[183] *Id.*

[184] *See generally* SJVUAPCD Rule 4354, as amended May 19, 2011; *see also* 2015 $PM_{2.5}$ Plan, Appendix C at pp. C–102.

[185] SJVUAPCD Rule 4354, as amended May 19, 2011, at pp. 5 and 7.

[186] 78 FR 6740 (January 31, 2013).

[187] 2015 $PM_{2.5}$ Plan, Appendix C, p. C–102.

[188] *See generally* SJVUAPCD Rule 4550, as adopted August 19, 2004; *see also* 2015 $PM_{2.5}$ Plan, Appendix C at pp. C–106.

[189] *Id.*

[190] 71 FR 7683 (February 14, 2006).

[191] 2015 $PM_{2.5}$ Plan, Appendix C at pp. C–114.

[192] *Id.*

[193] 2015 $PM_{2.5}$ Plan, Appendix C at pp. C–111.

[194] 2015 $PM_{2.5}$ Plan, Appendix C at pp. C–112.

[195] *Id.*

[196] 2015 $PM_{2.5}$ Plan, Appendix C at pp. C–110.

[197] *Id.* at Chapter 8, Section 8.3 (pg. 8–3).

requirements to reduce PM_{10} (of which $PM_{2.5}$ is a component) and VOC emissions from chain-driven charbroilers.[198] Specifically, the rule requires that chain-driven charbroilers be equipped and operated with a catalytic oxidizer with a control efficiency of at least 83% for PM_{10} emissions and 86% for VOC emissions.[199] The EPA approved Rule 4692 into the California SIP on November 3, 2011.[200]

The District compared the requirements in Rule 4692 to analogous requirements for chain-driven charbroilers implemented by the SCAQMD, Ventura County Air Pollution Control District (VCAPCD), and BAAQMD and found no requirements in these rules more stringent than those contained in Rule 4692, with one exception in the BAAQMD rule.[201] With respect to under-fired charbroilers (UFCs), the District found that no cost-effective control techniques have been demonstrated to date given technical challenges associated with controlling emissions from UFCs, which operate differently from chain-driven charbroilers.[202] Although the BAAQMD has adopted a rule that establishes control requirements for both chain-driven and under-fired charbroilers, according to the District, a significant portion of the UFCs in the BAAQMD are not subject to the rule's requirements for UFCs because they fall below the rule's applicability thresholds.[203] The District also stated that the BAAQMD has been unable to enforce its UFC requirements because no control technologies have been certified.[204]

The District also considered the technical and economic feasibility of alternative control techniques for UFCs, such as catalytic oxidizers, high efficiency particulate-arresting filtration system, ESPs, and wet scrubbers.[205] Based on its consideration of the technical difficulties and costs associated with installing these control devices at UFCs, the District concluded that these control techniques are not technically and economically feasible for sources in the SJV at this time.[206] The District also stated, however, that it expects to begin testing some of these additional control options in mid-2015. The District's Governing Board approved $750,000 for its Restaurant Charbroiler Technology Partnership program, which would fund particulate emission control technology demonstration projects for under-fired charbroilers at restaurants in the SJV.[207]

As part of the 2015 $PM_{2.5}$ Plan, the SJVUAPCD submitted a commitment to amend Rule 4692 in 2016 to add requirements for UFCs, with an anticipated compliance date of 2017.[208] The Plan relies on this commitment for a portion of the direct $PM_{2.5}$ emission reductions needed to attain the 1997 $PM_{2.5}$ NAAQS.[209]

Internal Combustion Engines

SJVUAPCD Rule 4702 (''Internal Combustion Engines''), as amended November 14, 2013, establishes NO_X, CO, VOC, and SO_X emission limits and related operational requirements for internal combustion (IC) engines.[210] The rule contains separate emission limits for spark-ignited IC engines used in agricultural operations (SI AO engines), spark-ignited IC engines used in non-agricultural operations (SI non-AO engines), and compression-ignited IC engines.[211] The EPA proposed to approve this rule into the California SIP on December 2, 2015.[212] The EPA approved a previous version of this rule into the California SIP on January 10, 2008.[213]

For SI non-AO engines, Rule 4702 establishes NO_X emission limits ranging from 25 to 75 ppmv.[214] According to the District, these NO_X emission limits are at least as stringent as many analogous control requirements implemented in the Bay Area, Sacramento Metro, and Ventura County areas.[215] We also note that Rule 4702 limits are at least as stringent as analogous requirements in the Feather River, Placer County, Mojave Desert, and San Diego areas.[216]

Some of the emission limits for SI non-AO engines in Rule 4702 are, however, less stringent than those implemented in the South Coast, El Dorado, and Antelope Valley areas for similar engines. Specifically, the SCAQMD has adopted an 11 ppmv limit for all IC engines; [217] El Dorado has adopted a 25 ppmv limit for SI ''rich-burn'' engines and a 65 ppmv limit for SI ''lean-burn'' engines (except those used exclusively in agricultural operations); [218] and Antelope Valley has adopted a 36 ppmv limit for IC engines (except those used exclusively in agricultural operations).[219] The District considered the technical and economic feasibility of alternative control techniques for SI non-AO engines that would lower the emission levels for certain engines to 11, 25, and 65 ppmv, but found that for reasons of both technical and economic feasibility, NO_X emission limits lower than those in Rule 4702 are generally not feasible for implementation in the SJV at this time.[220]

For SI AO engines, Rule 4702 establishes NO_X emission limits ranging from 90 to 150 ppmv.[221] These NO_X emission limits are more stringent than analogous control requirements implemented in the Sacramento Metro, Placer County, El Dorado, and Antelope Valley areas, which exempt AO engines from control requirements altogether, and are equivalent to analogous control requirements implemented in the Mojave Desert area.[222] The SCAQMD, however, has adopted an 11 ppmv limit for all IC engines,[223] and the BAAQMD has adopted NO_X emission limits ranging from 25–70 ppmv for all spark-ignited IC engines.[224] Thus, Rule 4702's

[198] *See generally* SJVUAPCD Rule 4692, as amended September 17, 2009; *see also* 2015 $PM_{2.5}$ Plan, Appendix C, p. C–115.

[199] *Id.*

[200] 76 FR 68103 (November 3, 2011).

[201] 2015 $PM_{2.5}$ Plan, Appendix C, pp. C–116 to C–117.

[202] *Id.*

[203] *Id.*

[204] *Id.* at p. C–116.

[205] *Id.* at pp. C–117, C–118.

[206] 2015 $PM_{2.5}$ Plan, Appendix C, pp. C–117 to C–119.

[207] SJVUAPCD Governing Board, Meeting Minutes of June 18, 2015 Governing Board Meeting, pp. 7–8.

[208] 2015 $PM_{2.5}$ Plan, Appendix C at p. C–119 and SJVUAPCD Governing Board Resolution 15–4–7A (April 16, 2015) at paragraph 7.

[209] 2015 $PM_{2.5}$ Plan, CARB Staff Report, p. 9. *See also* 2015 $PM_{2.5}$ Plan, Chapter 7, section 7.1.2, p. 7–6, and Appendix C, section C.16, pp. C–115 to C–119, which describe the charbroiling rule revision commitment in the context of the 2015 $PM_{2.5}$ Plan.

[210] *See generally* SJVUAPCD Rule 4702, as amended November 14, 2013; *see also* 2015 $PM_{2.5}$ Plan, Appendix C at p. C–120.

[211] *Id.*

[212] 80 FR 75442 (December 2, 2015).

[213] 73 FR 1819 (January 10, 2008).

[214] SJVUAPCD Rule 4702, as amended November 14, 2013, at Table 1.

[215] 2015 $PM_{2.5}$ Plan, Appendix C at pp. C–122 to C–123.

[216] Feather River AQMD Rule 3.22; Placer County APCD Rule 242; Mojave Desert AQMD Rule 1160; and San Diego APCD Rule 69.4.1.

[217] SCAQMD Rule 1110.2, as amended February 1, 2008.

[218] El Dorado County AQMD Rule 233, as amended June 2, 2006.

[219] Antelope Valley AQMD Rule 1110.2, as amended January 21, 2003.

[220] *See* section 3.h (Internal Combustion Engines) of the EPA's SJV Rules TSD, which provides a more detailed discussion of the District's technical and economic feasibility analyses.

[221] SJVUAPCD Rule 4702, as amended November 14, 2013, at Table 3.

[222] SMAQMD Rule 412, as amended June 1, 1995; Placer County APCD Rule 242, as adopted April 10, 2003; El Dorado County AQMD Rule 233, as amended June 2, 2006; Antelope Valley AQMD Rule 1110.2, as amended January 21, 2003; and Mojave Desert AQMD Rule 1160.1, as adopted January 23, 2012.

[223] SCAQMD Rule 1110.2, as amended February 1, 2008.

[224] Bay Area AQMD Regulation 9, Rule 8, as amended July 25, 2007.

requirements for SI AO engines are at least as stringent as most but not all analogous requirements implemented in other parts of California.

The District considered the technical and economic feasibility of alternative control techniques for SI AO engines that would lower their emission levels and found that for reasons of both technical and economic feasibility, NO_X emission limits lower than those in Rule 4702 are generally not feasible for implementation within SJV's agricultural industry at this time.[225] We note that the SCAQMD, like SJVUAPCD, has provided economic incentive grants for agricultural engine retrofits and replacement in recognition of unique economic and technical circumstances in the agricultural industry.[226]

Finally, for compression-ignited IC engines (both those used in agricultural operations and those used in non-agricultural operations), Rule 4702 requires that all certified engines meet the EPA's Tier 3 and Tier 4 emission standards for nonroad diesel engines and that non-certified engines meet the same standards or a numerical NO_X emission limit based on engine size.[227]

Stationary Gas Turbines

SJVUAPCD Rule 4703 (''Stationary Gas Turbines''), as amended September 20, 2007, establishes NO_X emission limits ranging from 5 to 25 ppm and related operational requirements for all stationary gas turbines with greater than 0.3 MW capacity.[228] These units operate primarily in the oil and gas production and utility industries, with some also operating in manufacturing and government facilities.[229] The EPA approved this rule into the California SIP on October 21, 2009.[230]

According to the District, the NO_X emission limits in Rule 4703 are more stringent than analogous control requirements implemented in many other parts of California, including the Sacramento Metro area, South Coast, and Ventura County.[231] The District considered the technical and economic feasibility of alternative control techniques to reduce emissions further, such as the installation of SCR or installation of entirely new turbine systems, and concluded that these options are extremely expensive and not economically feasible.[232] The District also considered the potential for installation of EMx system for NO_X control and concluded that this technology requires further testing before it will be generally available for implementation in the SJV.[233]

Wood Burning Fireplaces and Wood Burning Heaters

SJVUAPCD Rule 4901 (''Wood Burning Fireplaces and Wood Burning Heaters''), as amended September 18, 2014, is designed to limit emissions of PM, including $PM_{2.5}$ and PM_{10}, and other pollutants generated by the use of wood burning fireplaces, wood burning heaters, and outdoor wood burning devices. The rule establishes requirements for the sale/transfer, operation, and installation of wood burning devices and on the advertising of wood for sale within the SJV.[234] The EPA proposed to approve this rule into the SIP on September 30, 2015.[235]

Rule 4901 includes a mandatory two-tiered curtailment program. During a Level One Episodic Wood Burning Curtailment, which is declared when the $PM_{2.5}$ concentration is forecasted to be between 20–65 $\mu g/m^3$, operation of wood burning fireplaces and unregistered wood burning heaters is prohibited, but properly operated wood burning heaters that meet certification requirements and have a current registration with the District may be used. During a Level Two Episodic Wood Burning Curtailment, which is declared when the $PM_{2.5}$ concentration is forecasted to be above 65 $\mu g/m^3$ or the PM_{10} concentration is forecasted to be above 135 µg/m3, operation of any wood burning device is prohibited.[236]

According to SJVAPCD, Rule 4901 is at least as stringent as analogous rules in other areas, including the South Coast, Bay Area, Sacramento Metro area, Washoe County, Nevada, and Washington State.[237] We note that SCAQMD Rule 445 includes a mandatory curtailment of all devices when the 24-hour average $PM_{2.5}$ concentration is forecasted above 30 $\mu g/m^3$, and SMAQMD Rule 421 bans operation of all wood burning devices when ambient $PM_{2.5}$ concentrations are above 35 $\mu g/m^3$. According to the District, however, the small increase in emissions from registered clean burning devices when concentrations are between 20–65 $\mu g/m^3$ in the SJV will be more than offset by the decrease in emissions from dirty devices when concentrations are between 20–30 $\mu g/m^3$, which will reduce the build-up of emissions during long periods of stagnation experienced in the wintertime in the Valley.[238]

Rule 4901 incorporates all elements outlined in the EPA's *Strategies for Reducing Wood Smoke*[239] and includes comparable provisions available in other analogous rules. We are not aware of more stringent measures for reducing residential wood smoke that are technically and economically feasible for implementation in the SJV. Our Technical Support Document to support our separate proposal on Rule 4901 contains a more detailed discussion of this rule in comparison to analogous rules implemented elsewhere.[240]

Paved and Unpaved Roads

SJVUAPCD Rule 8061 (''Paved and Unpaved Roads''), as amended August 19, 2004, is designed to limit fugitive dust emissions generated from paved and unpaved roads. The rule establishes control measures and design criteria for existing public and private paved or unpaved roads, road construction projects, and road modification projects, such as requirements to stabilize unpaved roads by applying water, a uniform layer of washed gravel, chemical/organic dust stabilizers/suppressants, paving, or any other method demonstrated to effectively limit visible dust to 20% opacity.[241] The EPA approved this rule into the SIP on February 17, 2006.[242]

The District compared Rule 8061 to SCAQMD Rule 1156 (''Further Reductions of Particulate Emissions from Cement Manufacturing Facilities''); SCAQMD Rule 1157 (''PM–10 Emission Reductions from Aggregate and Related Operations''); SMAQMD Rule 403 (''Fugitive Dust''); VCAPCD Rule 55 (''Fugitive Dust''); Clark County

[225] *See* section 3.h (Internal Combustion Engines) of the EPA's SJV Rules TSD.

[226] SCAQMD Final Staff Report for Rule 1110.2, May 2005, Appendix B: Incentive Funding Available for Agricultural Engine Emission Reductions.

[227] SJVUAPCD Rule 4702, as amended November 14, 2013, at Table 4.

[228] SJVUAPCD Rule 4703, as amended September 20, 2007, at Table 5–3.

[229] 2015 $PM_{2.5}$ Plan, Appendix C at p. C–142.

[230] 74 FR 53888 (October 21, 2009).

[231] 2015 $PM_{2.5}$ Plan, Appendix C at p. C–144.

[232] *Id.*

[233] *Id.*

[234] *See generally* SJVUAPCD Rule 4901, as amended September 18, 2014.

[235] 80 FR 58637 (September 30, 2015). Also, EPA approved a previous version of Rule 4901, as adopted October 16, 2008, into the SIP on November 10, 2009 (74 FR 57907).

[236] SJVUAPCD Rule 4901, as amended September 18, 2014, at paragraph 5.6.

[237] 2015 $PM_{2.5}$ Plan, Appendix C, pp. C–156.

[238] Rule 4901 Staff Report, p. 19.

[239] ''Strategies for Reducing Residential Wood Smoke,'' EPA–456/B–13–001, March 2013.

[240] U.S. EPA Region 9, ''Technical Support Document for EPA's Proposed Rulemaking for the California State Implementation Plan (SIP), San Joaquin Valley Unified Air Pollution Control District Rule 4901 Wood Burning Fireplaces and Wood Burning Heaters,'' August 2015. *See also* section 3.f (Conservation Management Practices) of the EPA's SJV Rules TSD.

[241] SJVUAPCD Rule 8061, as amended August 19, 2004, at section 5.2.1.

[242] 71 FR 8461 (February 17, 2006).

Department of Air Quality Section 91 (''Fugitive Dust from Unpaved Roads, Unpaved Alleys, and Unpaved Easement Roads''), and Section 93 (''Fugitive Dust from Paved Roads and Street Sweeping Equipment'').[243] Based on these evaluations, SJVUAPCD concluded that no other areas implemented requirements more stringent than those already in Rule 8061.

The District also considered the feasibility of requiring control measures on paved and unpaved roads with less than 26 annual average daily trips (AADT). Such a measure would require more road owners/operators to implement control measures to reduce fugitive emissions from paved and unpaved roads. SJVUAPCD's analysis of the emission inventory indicates that the majority of the particulate emissions attributable to unpaved roads are from roads with more than 26 AADT. Because these roads are already subject to the mitigation requirements of Rule 8061, the District concluded that the remaining emissions from unpaved roads with less than 26 AADT provide very little opportunity for additional emissions reductions. Additionally, the District noted that emissions from unpaved roads are lowest in the winter months, when exceedances of the 24-hour $PM_{2.5}$ standard tend to occur. For these reasons, SJVUAPCD concluded that additional control measures for paved and unpaved road with less than 26 AADT would not achieve emission reductions.[244]

Asphalt/Concrete Operations

SJVUAPCD Rule 4101 (''Visible Emissions''), as amended February 17, 2005, establishes limits on opacity, which is often used as an indicator of PM emissions. SJVUAPCD Rule 4309 (''Dryers, Dehydrators, and Ovens''), as amended December 15, 2005, establishes NO_X and CO emission limits for dryers, dehydrators and ovens firing gaseous or liquid fuel with a total rated heat input of at least 5.0 MMBtu/hr. Under Rule 4309, asphalt/concrete manufacturing plants that operate equipment of this size are subject to NO_X emission limits of 4.3 ppm (gaseous fuel) and 12.0 ppm (liquid fuel).[245] The EPA approved Rule 4101 into the California SIP on August 11, 2005 [246] and approved Rule 4309 into the California SIP on May 30, 2007.[247]

According to the District, there are no state regulations that apply to this source category and no analogous rules in the Bay Area, Sacramento Metro, or Ventura County areas.[248] The District evaluated analogous rules implemented in the South Coast and found no requirements more stringent than those in SJVUAPCD Rule 4101 and Rule 4309.[249] We are not aware of more stringent control requirements for visible emissions or NO_X emissions in other California districts for asphalt plants.

The District also considered the technical and economic feasibility of using warm mix asphalt (WMA), a newer substance which is produced at temperatures 25 to 90 degrees (Fahrenheit) lower than hot mix asphalt (HMA) and which results in lower emissions because it requires less fuel to heat the asphalt. Although the use of WMA has grown steadily in the U.S., the District concluded that use of WMA at asphalt production facilities in the SJV is not technically and economically feasible at this time given the high costs of, and technical difficulties associated with, converting equipment.[250]

Chapter 8 of the 2015 $PM_{2.5}$ Plan includes a commitment by the District to evaluate and promote the use of WMA in the SJV, in close coordination with stakeholders (including asphalt plant operators, Caltrans, city and county planning agencies, CARB, and the EPA); to have a draft report available for public review and comment by December 1, 2015; and to develop a final report by March 31, 2016, after addressing public comments. As part of this evaluation, the District committed to (1) evaluate opportunities to further encourage transportation and county agencies to continue transitioning from HMA to WMA as feasible, (2) to explore the potential feasibility of additional control measures and the granting of mitigation credits for WMA usage through the District's Indirect Source Review (ISR) program, and (3) to consider outreach and education opportunities for encouraging project developers and construction managers to increase the use of WMA.[251] The District issued its draft report on WMA on December 1, 2015, starting a 30-day public comment period.[252]

Confined Animal Facilities (CAFs)

SJVUAPCD Rule 4570 (''Confined Animal Facilities''), as amended October 21, 2010, applies to large dairy, poultry, beef cattle feeding and swine CAFs and requires operators of such facilities to implement measures to control VOC emissions for each major stage of operation, *e.g.,* feeding, silage, milking (dairy), housing, waste management, and waste storage/application.[253] According to the District, although Rule 4570 was developed to limit VOC emissions, the work practice standards contained in the rule also reduce ammonia emissions—for example through mitigation measures for nutritional management, increased cleaning and removal of manure and litter from housing areas, and land incorporation of manure and litter.[254] The EPA approved Rule 4570 into the California SIP on January 17, 2012.[255]

The District compared the requirements of Rule 4570 with those in analogous prohibitory rules implemented in other areas, including the South Coast, Bay Area, Sacramento Metro, Ventura County, Imperial County, and the State of Idaho, and concluded that Rule 4570 is more stringent than all of these rules.[256] For example, Rule 4570 contains applicability thresholds that are more stringent than those in analogous rules implemented in the South Coast (Rule 233) and Idaho (Rule 58.01.01).[257] We note that it is difficult to directly compare the requirements among these rules because of the widely varying rule structures and operations of confined animal facilities.

The District also considered the technical and economic feasibility of alternative control techniques for CAFs, including episodic application of sodium bisulfate (SBS) on manure at dairies, which converts a greater fraction of ammonia to non-volatile ammonium.[258] Given the costs of SBS application and its potential adverse impacts on worker safety and health, cattle health, and water quality, the District concluded that SBS application this control option is not technically and economically feasible for implementation in the SJV at this time.[259] The District also evaluated the use of covers to reduce ammonia from

[243] 2015 $PM_{2.5}$ Plan, Appendix C, pp. C–194 to C–197.

[244] *Id.* at p. C–196.

[245] SJVUAPCD Rule 4309, as adopted December 15, 2005, at p. 5.

[246] 70 FR 46770 (August 11, 2005).

[247] 72 FR 29886 (May 30, 2007).

[248] 2015 $PM_{2.5}$ Plan at Appendix C, pp. C–219, C–220.

[249] *Id.* (citing SCAQMD Rule 1157 and Rule 403).

[250] *Id.* at pp. C–221, C–225.

[251] *Id.* at Chapter 8, Section 8.2, p. 8–3.

[252] SJVUAPCD, ''Draft Further Study, Warm Mix Asphalt,'' December 1, 2015.

[253] *See generally* Rule 4570, as amended October 21, 2010; *see also* 2015 $PM_{2.5}$ Plan, Appendix C, pp. C–240.

[254] 2015 $PM_{2.5}$ Plan at Appendix C, p. C–241.

[255] 77 FR 2228 (January 17, 2012).

[256] 2015 $PM_{2.5}$ Plan at Appendix C, pp. C–236 to C–267.

[257] *Id.*

[258] *Id.* at pg. C–267.

[259] *Id.*

lagoons and solid manure storage piles and found no definitive evidence that such techniques would reduce ammonia emissions. To the contrary, the District stated, several studies indicated that anaerobic lagoon covers might increase ammonia emissions.[260]

Compost Operations

SJVUAPCD Rule 4565 (''Biosolids, Animal Manure, and Poultry Litter Operations''), as adopted March 15, 2007, establishes requirements for facilities that landfill, land apply, compost, or co-compost biosolids, animal manure, or poultry litter.[261] SJVUAPCD Rule 4566 (''Organic Material Composting''), as adopted August 18, 2011, establishes requirements for facilities that stockpile and compost greenwaste and foodwaste materials.[262] According to the District, although both of these rules were designed to control VOC emissions, both rules establish work practice standards that have the co-benefit of reducing ammonia emissions.[263] The EPA approved Rules 4565 and 4566 into the California SIP on January 17, 2012 [264] and November 29, 2012,[265] respectively.

The District compared the requirements of Rule 4565 and Rule 4566 with those in an analogous prohibitory rule implemented in the South Coast area (Rule 1133.2) and found that the SCAQMD rule requires in-vessel composting with 70% to 80% control efficiency for existing and new facilities, respectively, while SJVUAPCD Rule 4565 requires 10% to 80% control efficiency based on annual throughput.[266] According to the District, however, the lower control efficiencies required by SJVUAPCD Rule 4565 are appropriate because in-vessel composting is not cost-effective for smaller or medium-sized facilities, and SCAQMD does not regulate any facilities of the size that is subject to the 80% control requirement.[267] Moreover, the District states that Rule 4565 contains a more stringent applicability threshold (100 tpy of biosolids, animal manure or poultry litter) compared to the applicability threshold in SCAQMD Rule 1133.2 (1,000 tpy VOC).[268]

The District also considered the technical and economic feasibility of alternative control techniques for compost operations, including finished compost covers and water systems, but found that these control techniques are not technically and economically feasible for compost operations in the SJV at this time.[269] The District also noted that it has funded a project through its Technology Advancement Program that could potentially reduce ammonia and other emissions at large greenwaste and/or foodwaste composting facilities—specifically, an ''extended aerated stack pile (eASP) method'' which substitutes diesel-powered loaders with electronic conveyor systems to build piles, uses solar-powered blowers to replace diesel-powered windrow turners, and uses finished compost biofilter covers.[270] According to the District, the study authors note that this demonstration project is the first test of this technology and recommend further testing and evaluation to assure results on an industry-wide basis.[271] We note that there are other environmental benefits associated with composting operations, including diversion of material from landfills, which should be considered in evaluating the feasibility of additional controls for this source category.

b. State Measures for Mobile Sources

CARB's BACM and MSM demonstration for mobile sources is in Appendix D of the 2015 $PM_{2.5}$ Plan. CARB has primary responsibility for reducing emissions in California from new and existing on-road and off-road engines and vehicles, motor vehicle fuels, and consumer products. Given the need for significant emissions reductions from mobile sources to meet the NAAQS in California nonattainment areas, CARB has been a leader in the development of stringent control measures for on-road and off-road mobile sources, fuels and consumer products.[272]

Under the Clean Air Act, the EPA is charged with establishing national emission limits for mobile sources. States are generally preempted from establishing such limits except for California, which can establish these limits subject to EPA waiver or authorization under CAA section 209 (referred to herein as ''waiver measures''). Over the years, the EPA has issued waivers (for on-road vehicles and engines measures) or authorizations (for non-road vehicle and engine measures) [273] for many mobile source regulations adopted by CARB.[274] California attainment and maintenance plans, including the 2015 $PM_{2.5}$ Plan for the SJV, rely on emissions reductions from implementation of the waiver measures through the use of emissions models such as EMFAC2014.

Historically, California has not submitted, and the EPA has not required that California submit, its mobile source rules that have been granted a waiver or authorization by the EPA for inclusion in the California SIP. However, a recent decision by the Ninth Circuit Court of Appeals held that the EPA's longstanding practice in this regard was at odds with the CAA requirement that state and local emissions limits relied upon to meet the NAAQS be enforceable by the EPA or private citizens through

[260] Email dated June 25, 2015, from Sheraz Gill, SJVUAPCD to Andy Steckel, EPA, re: Requested Information, and attachments.

[261] *See generally* SJVUAPCD Rule 4565, as adopted March 15, 2007; *see also* 2015 $PM_{2.5}$ Plan, Appendix C, pp. C–276.

[262] *See generally* SJVUAPCD Rule 4566, as adopted August 18, 2011; *see also* 2015 $PM_{2.5}$ Plan, Appendix C, pp. C–272.

[263] 2015 $PM_{2.5}$ Plan, Appendix C, pp. C–272 and C–276.

[264] 77 FR 2228 (January 17, 2012).

[265] 77 FR 71129 (November 29, 2012).

[266] 2015 $PM_{2.5}$ Plan, Appendix C at pp. C–272, C–273.

[267] *Id.*

[268] *Id.*

[269] *Id.* at pp. C–275 to C–276 and C–279.

[270] 2015 $PM_{2.5}$ Plan, Appendix E, p. E–15.

[271] *Id.*

[272] The Plan does not address CARB's consumer products program because it is primarily designed to reduce emissions of VOCs, which the State has excluded from its control strategy for attaining the $PM_{2.5}$ NAAQS in the SJV.

[273] California regulations use the term ''off-road'' to refer to ''nonroad'' vehicles and engines.

[274] The Clean Air Act assigns mobile source regulation to EPA through title II of the Act and assigns stationary source regulation and SIP development responsibilities to the states. In so doing, the CAA preempts various types of state regulation of mobile sources as set forth in section 209(a) (preemption of state emissions standards for new motor vehicles and engines), section 209(e) (preemption of state emissions standards for nonroad vehicles and engines), and section 211(c)(4)(A) [preemption of state fuel requirements for motor vehicles, *i.e.,* other than California's motor vehicle fuel requirements—*see* section 211(c)(4)(B)]. For certain types of mobile source standards, the State of California may request a waiver or authorization for state emission standards.

CAA section 209(b)(1) and (e)(2) give California unique authority under the CAA to regulate emissions from new motor vehicles and nonroad engines, except for locomotives and engines used in farm and construction equipment less than 175 horsepower. To exercise its authority, California must obtain a waiver from EPA demonstrating that the standards, in the aggregate, are at least as protective of public health and welfare as applicable federal standards. Additionally, EPA must grant a waiver unless California's ''protectiveness determination'' is arbitrary and capricious; California does not need the standards to meet compelling and extraordinary conditions; or California's standards and accompanying enforcement procedures are not consistent with CAA § 202(a). EPA has previously stated that consistency with section 202(a) requires that California's standards must be technologically feasible within the lead time provided, giving due consideration of costs. *See, e.g.,* 74 FR 32767 (July 8, 2009) regarding the greenhouse gas waiver. Once a waiver is granted, compliance with California's new motor vehicle or engine standards is treated as compliance with applicable federal standards. In the absence of a waiver, the applicable federal mobile source standards apply.

adoption and approval of such limits in the SIP.[275]

In response to the Court's ruling, CARB has submitted its mobile source control rules that have been granted waivers or authorizations but have not been included in the SIP, and, in a separate rulemaking, the EPA has proposed to approve these rules into the SIP.[276] Upon the EPA's final approval of these rules into the SIP, which the EPA intends to complete before or concurrent with final action on the 2015 $PM_{2.5}$ Plan, the measures will be enforceable by the EPA or private citizens under the CAA.

In addition to waiver measures, CARB has adopted operational requirements for in-use vehicles, rules that limit the amounts of pollutants allowed in transportation fuels, and incentive programs that provide funding to replace or retrofit older, dirtier vehicles and equipment with cleaner technologies.[277]

The EPA previously determined that California's mobile source control programs constituted BACM for PM_{10} purposes in the San Joaquin Valley.[278] Since then, the State has adopted additional mobile source control measures including the Advanced Clean Cars program, heavy-duty vehicle idling rules, revisions to the State's vehicle inspection and maintenance (I/M) program, in-use rules for on-road and non-road diesel vehicles, and emissions standards for non-road equipment, farm and cargo handling equipment, and recreational vehicles.[279]

CARB's BACM and MSM analysis provides a discussion of the measures adopted and implemented for each of the identified source categories. We discuss each of these mobile source categories below.

Light and Medium Duty Vehicles

This category includes light-duty passenger cars, light-duty trucks, and medium-duty trucks. The source category's emissions are 32.2 tpd NO_X and 1.9 tpd direct $PM_{2.5}$.[280]

CARB has a long history of adopting programs for reducing emissions from this source category. Light-duty and medium-duty motor vehicles are currently subject to California's ''Low-Emission Vehicle III'' (LEV III) standards as well as a ''Zero Emission Vehicle'' (ZEV) requirement. The LEV III standards are consistent, or harmonized, with the subsequently adopted national Tier 3 standards for the same vehicles. California's ZEV program, however, does not have a national counterpart and results in additional emissions reductions as it phases in a requirement that 15% of new light-duty vehicle sales consist of ZEV or partial ZEV.[281] Taken as a whole, California's standards for light and medium-duty vehicles are more stringent than the federal standards.

California has also adopted regulations for gasoline fuel (California Reformulated Gasoline or CaRFG) which reduce emissions from light-duty and medium-duty vehicles. On July 10, 2009, the EPA approved the CaRFG regulations into the California SIP.[282]

Heavy-Duty Vehicles

This category includes heavy-duty gas and diesel trucks, heavy-duty gas and diesel urban buses, school buses and motor homes. The emissions from this category are 130.6 tpd NO_X and 4.8 tpd direct $PM_{2.5}$.[283]

California has the most stringent heavy-duty vehicle emissions control measures in the nation, including engine standards for diesel and gasoline vehicles, idling requirements, certification procedures, on-board diagnostic requirements, and verification measures for emissions control devices. Many of these control measures are subject to the CAA waiver process and have also been submitted for inclusion in the SIP.[284]

California has also adopted many in-use requirements to help reduce emissions from the vehicles already on the road, which may remain in use for many years. The most recently adopted in-use requirement is the Cleaner In-Use Heavy-Duty Trucks measure (''Truck and Bus Regulation and Drayage Truck Regulation''), which became effective in 2011 and the EPA approved into the SIP in 2012.[285] The Truck and Bus Regulation and Drayage Truck Regulation are designed to reduce emissions of diesel particulate matter, NO_X, and other pollutants from in-use trucks and buses and establish, among other things, phased-in PM control requirements from 2014 through 2023.

Finally, California has adopted regulations for diesel fuel that further reduce emissions from heavy-duty trucks. The EPA approved these diesel fuel regulations into the California SIP on July 10, 2009.[286]

Off-Road Vehicles and Engines

This category includes off-road compression ignition (diesel) engines and equipment, small spark ignition (gasoline) off-road engines and equipment less than 25 horsepower (hp) (*e.g.,* lawn and garden equipment), off-road large gasoline engines and equipment greater than 25 hp (*e.g.,* forklifts, portable generators), and airport ground service equipment. The emissions from this category total 19.2 tpd NO_X and 1.1 tpd direct $PM_{2.5}$.[287]

As it has done for the on-road categories discussed above, CARB has adopted stringent new emissions standards subject to EPA authorization under CAA section 209(e) and in-use measures or requirements for this source category (*e.g.,* incentives for early introduction of cleaner engines and equipment and requirements to limit vehicle idling). CARB has been regulating off-road equipment since the 1990s and its new engine standards for off-road vehicles and engines are generally as stringent as the corresponding federal standards. For larger off-road equipment, which can have a slow turnover rate, CARB adopted an in-use off-road regulation in 2007 that requires owners of off-road equipment in the construction and other industries to retrofit or replace older engines/equipment with newer, cleaner models. The off-road regulation also imposes idling limitations.[288]

Farm Equipment

The farm equipment category includes agricultural equipment such as tractors, harvesting equipment and sprayers. The category's emissions are 50.4 tpd NO_X and 2.9 tpd $PM_{2.5}$. CARB has adopted standards identical to the EPA's standards for this off-road engine category. CARB notes also that State, District, and federal incentive funds have resulted in the replacement of over 3,000 pieces of agricultural equipment earlier than required by state and federal regulations.[289]

Other Mobile Source Categories

Other mobile source categories identified by CARB in the Plan include cargo handling equipment, motorcycles, recreational boats, off-road recreational vehicles and commercial harbor craft. The emissions from all of these

[275] *Committee for a Better Arvin* v. *EPA*, 786 F.3d 1169 (9th Cir. 2015).

[276] 80 FR 69915 (November 12, 2015).

[277] 2015 $PM_{2.5}$ Plan, Appendix D, pp. D–9 to D–11.

[278] 69 FR 5412 at 5419 (February 4, 2004).

[279] 2015 $PM_{2.5}$ Plan, Appendix D, pages D–4 to D–19.

[280] 2015 $PM_{2.5}$ Plan, Appendix D, p. D–5.

[281] 78 FR 2112 at 2119 (January 9, 2013).

[282] 74 FR 33196 (July 10, 2009).

[283] 2015 $PM_{2.5}$ Plan, Appendix D, p. D–8.

[284] 2015 $PM_{2.5}$ Plan, Appendix D, p. D–8 to D–12. *See also* 80 FR 69915 (November 12, 2015).

[285] 77 FR 20308, April 4, 2012.

[287] 2015 $PM_{2.5}$ Plan, Appendix D, pp. D–12 to D–14.

[288] *Id.*

[289] 2015 $PM_{2.5}$ Plan, Appendix D, pp. D–15.

categories total 3.5 tpd NO_X and 0.5 tpd direct $PM_{2.5}$. Although CARB considers these categories ''insignificant'' for BACM purposes in the 2015 $PM_{2.5}$ Plan, CARB provided a discussion of the emission standards and other measures it has adopted to control emissions from these categories.[290]

c. Local Jurisdiction Transportation Control Measures (TCMs)

TCMs are, in general, measures designed to reduce emissions from on-road motor vehicles through reductions in vehicle miles traveled or traffic congestion. TCMs can reduce $PM_{2.5}$ emissions in both the on-road motor vehicle exhaust and paved road dust source categories by reducing vehicle miles traveled (VMT) and vehicle trips. They can also reduce vehicle exhaust emissions by relieving congestion. EPA guidance states that where mobile sources contribute significantly to $PM_{2.5}$ violations, ''the state must, at a minimum, address the transportation control measures listed in CAA section 108(f) to determine whether such measures are achievable in the area considering energy, environmental and economic impacts and other costs.'' [291]

The current efforts by the SJV's eight local jurisdiction metropolitan planning organizations (MPO) [292] to implement cost-effect transportation control measures (TCM) are described in Chapter 6.5.6 of the 2015 $PM_{2.5}$ Plan.[293] The Plan includes a discussion of the on-going implementation of a broad range of TCMs in the Valley. There is also a discussion of the MPOs' Congestion Management and Air Quality (CMAQ) funding policy, which is a standardized process across the Valley for distributing 20% of the CMAQ funds to projects that meet a minimum cost-effectiveness.[294]

Each Valley MPO is required to update its Regional Transportation Plan (RTP) at least once every four years.[295] The RTP is a long-term regional transportation plan that provides a vision for transportation investments throughout the Valley. To further illustrate the eight SJV MPOs' commitment to the implementation of TCMs, the RTPs contain a host of improvements to the regional multimodal transportation system including: Active transportation (*e.g.,* biking and walking), transportation demand management, transportation system management, transit, passenger rail, goods movement, aviation and airport ground access, highways, arterials, and operations and maintenance. Included within these transportation system improvements are TCM projects that reduce vehicle use or change traffic flow or congestion conditions, such as: Improved transit, high occupancy vehicle lanes, traffic flow improvements, park and ride lots, ridesharing/trip reduction programs, and bicycle/pedestrian facilities.[296] These projects are listed in each MPO's conformity analysis for the 2014 RTP and 2015 Federal Transportation Improvement Program (FTIP).[297] The FTIP is a four-year spending plan that lists every transportation project that will receive federal funds or that is subject to a federally required action, such as a review and approval of environmental documents.

The SJV has a long history of adopting and then enhancing programs to reduce emissions from on-road motor vehicles by reducing vehicle miles traveled, vehicle trips, and/or congestion. For example, Rule 9410 (''Employer Based Trip Reduction'' or ''eTRIP''), requires larger employers to establish an Employer Trip Reduction Implementation Plan to encourage employees to reduce single-occupancy vehicle trips, thus reducing emissions, including $PM_{2.5}$ and NO_X, associated with work commutes.[298] The MPOs implement public outreach programs to encourage people to reduce driving, programs to improve bicycling and pedestrian travel, and an extensive program to synchronize traffic lights.

In our approval of California's Serious area plan for the 1987 PM_{10} NAAQS in the SJV [299] (''2003 PM_{10} Plan''), we determined that the measures in the ''Regional Transportation Planning Agency Commitments for Implementation Document'' (April 2002) [300] satisfied the PM_{10} BACM requirement for TCMs.[301] In May 2003, the San Joaquin Valley MPO Executive Directors committed to conduct feasibility analyses as part of each successive RTP in support of the 2003 PM_{10} Plan. The MPOs retained this commitment in the PM_{10} maintenance plan for the SJV area adopted September 20, 2007.[302] In accordance with their commitment and in preparation for their 2014 RTPs, the MPOs reviewed several PM_{10} Plans adopted in other areas since 2009.[303] From their reviews, the MPOs concluded no additional on-road fugitive dust controls measures were available for consideration. In consultation with CARB and the District, however, the MPOs considered priority funding allocations in the 2014 RTPs for PM_{10} and NO_X emission reduction projects for the measures listed below.

- Paving or Stabilizing Unpaved Roads and Alleys
- Curbing, Paving, or Stabilizing Shoulders on Paved Roads
- Frequent Routine Sweeping or Cleaning of Paved Roads (*i.e.,* funding allocation for the purchase of PM_{10} efficient street sweepers for member jurisdictions); and
- Repave or Overlay Paved Roads with Rubberized Asphalt.[304]

In their implementation of the Congestion Mitigation and Air Quality (CMAQ) Improvement Program, the SJV MPOs evaluate and prioritize the

[290] 2015 $PM_{2.5}$ Plan, Appendix D, pp. D–15 to D–18.

[291] Addendum at 42013.

[292] These eight MPOs represent the eight counties in the San Joaquin Valley air basin: The San Joaquin Council of Governments, the Stanislaus Council of Governments, the Merced County Association of Governments, the Madera County Transportation Commission, the Council of Fresno County Governments, Kings County Association of Governments, the Tulare County Association of Governments and Kern Council of Governments.

[293] 2015 $PM_{2.5}$ Plan, Chapter 6.5.6, p. 6–19.

[294] For an example of the CMAQ funding policy implemented by the eight SJV MPOs, *see* ''Resolution To Adopt The Local Cost-Effectiveness Congestion Mitigation And Air Quality (CMAQ) Program Policy,'' San Joaquin Council Of Governments (SJCOG), R–08–03, July 26, 2007,'' and ''Exhibit A, Local Cost-Effectiveness CMAQ Policy,'' SJCOG.

[295] 23 CFR 450.322(c)

[296] *See, e.g.,* Fresno Council of Government's Conformity Analysis for 2014 RTP and Sustainable Community Strategy, adopted June 26, 2014, Appendix D, *Timely Implementation Documentation for Transportation Control Measures.* The 2014 RTP is combined with the Sustainable Communities Strategy to integrate land use and transportation planning to achieve, where feasible, regional greenhouse gas (GHG) targets set by the CARB pursuant to Senate Bill 375, which identifies specific GHG reduction goals for each of California's MPOs in 2020 and 2035.

[297] *Id.*

[298] EPA, Final rule, ''Approval and Promulgation of Implementation Plans; California; San Joaquin Valley Unified Air Pollution Control District; Employer Based Trip Reduction Programs,'' pre-publication notice signed December 11, 2015; *see also* 80 FR 51153 (August 24, 2015) (proposed rule).

[299] SJVUAPCD, ''2003 PM_{10} Plan, San Joaquin Valley Plan to Attain Federal Standards for Particulate Matter of 10 Microns and Smaller,'' submitted August 19, 2003 as amended by subsequent submission of December 30, 2003.

[300] SJVUAPCD, ''Regional Transportation Planning Agency Commitments for Implementation Document,'' April 2002.

[301] 69 FR 30006 at 30020, 30035 (May 26, 2004).

[302] SJVUAPCD, ''2007 PM_{10} Maintenance Plan and Request for Redesignation,'' submitted November 16, 2007. Chapter 7, p. 21.

[303] PM_{10} Plans reviewed included: Puerto Rico, Municipality of Guaynabo, PM_{10} Limited Maintenance Plan; Nogales, AZ, PM_{10} Attainment Demonstration; Coso Junction, CA, PM_{10} Maintenance Plan, May 17, 2010; Sacramento, CA, PM_{10} Implementation/Maintenance Plan, October 28, 2010; Truckee Meadows, NV, PM_{10} Maintenance Plan, May 2009; and Eagle River, AK, PM_{10} Maintenance Plan, adopted August 2010.

[304] *See, e.g.,* Fresno Council of Government's Conformity Analysis for 2014 RTP and Sustainable Community Strategy, adopted June 26, 2014, Chapter 4, Section E, p. 42.

reduction of PM_{10} emissions in the CMAQ scoring criteria. The MPOs continue to implement the adopted San Joaquin Valley CMAQ Policy, which was included in the District's plan for the 1997 ozone NAAQS [305] and the 2008 $PM_{2.5}$ Plan. The CMAQ policy includes a standardized process for distributing 20% of the CMAQ funds to projects that meet a minimum cost effectiveness beginning in fiscal year 2011. This policy focuses on achieving the most cost effective emissions reductions, while maintaining flexibility to meet local needs. The 2015 FTIP includes a listing of all transportation-related projects requiring federal funding or other approval by the federal transportation agencies. The aggregate funding allocated [306] for TCMs in the eight SJV 2015 FTIPs includes:

- Improved transit; ($928,000,000)
- traffic flow improvements ($499,381,000)
- park and ride lots; ($2,666,346)
- ridesharing/trip reduction programs; ($7,630,000)
- bicycle/pedestrian facilities ($6,650,000)

3. Conclusion

Based on all of these evaluations, we propose to find that the 2015 $PM_{2.5}$ Plan provides for the implementation of BACM and MSM for sources of direct $PM_{2.5}$ and $PM_{2.5}$ precursors as expeditiously as practicable, in accordance with the requirements of CAA sections 189(b)(1)(B) and 188(e).

E. Extension of Serious Area Attainment Date Under CAA Section 188(e)

Section 188(e) of the Act allows the EPA to extend the attainment date for a serious area for up to five years if attainment by the applicable date is impracticable. However, before we may grant an extension of the attainment date, the State must first:

(1) Apply to the EPA for an extension of the $PM_{2.5}$ attainment date beyond 2015,

(2) demonstrate that attainment by 2015 is impracticable,

(3) have complied with all requirements and commitments applying to the area in its implementation plan,

(4) demonstrate to our satisfaction that its serious area plan includes the most stringent measures that are achieved in practice in any state and are feasible for the area, and

(5) submit SIP revisions containing a demonstration of attainment by the most expeditious alternative date practicable.

We evaluate the 2015 $PM_{2.5}$ Plan's compliance with each of these requirements below.

1. Application for an Attainment Date Extension

As discussed in section IV.D of this proposed rule, for the SJV, the Serious area attainment date for the 1997 $PM_{2.5}$ NAAQS under CAA section 188(c)(2) is December 31, 2015. The first criterion of an extension of the attainment date beyond this statutory attainment date is that the State must apply for such extension. In the 2015 $PM_{2.5}$ Plan, CARB and SJVUAPCD submit a complete application for an extension of the Serious area attainment date for the SJV to December 31, 2020 for the 1997 annual $PM_{2.5}$ standard and to December 31, 2018 for the 1997 24-hour $PM_{2.5}$ standard.[307]

2. Demonstration That Attainment by Serious Area Attainment Date Is Impracticable

Despite the implementation of BACM as expeditiously as practicable, as discussed in section V.D. above, the 2015 $PM_{2.5}$ Plan shows that attainment by the Serious area attainment date is impracticable. We discuss below the air quality data that support the State's and District's demonstration of impracticability.

Chapter 4, Section 4.1 of the 2015 $PM_{2.5}$ Plan presents data showing that the SJV area cannot attain the 1997 $PM_{2.5}$ annual and 24-hour standards by December 31, 2015.[308] Specifically, the District provided ambient $PM_{2.5}$ air quality data from monitoring sites in the SJV, including 2013 measured concentrations and 2014 measured and estimated concentrations, and then calculated the maximum 2015 annual average and 24-hour concentrations for each monitoring site that would result in a 3-year average $PM_{2.5}$ concentration of 15.0 $\mu g/m^3$ (*i.e.,* annual design value), and 3-year average 98th percentile concentration of 65 $\mu g/m^3$ (*i.e.,* 24-hour design value), at each monitoring site. The District states that several of the maximum allowable 2015 concentrations are so low, and in one instance a negative number, that attaining the standards by December 31, 2015 is impracticable.[309] A separate analysis is presented for the annual and 24-hour standards and we have evaluated each with respect to demonstrating impracticability of attaining the 1997 $PM_{2.5}$ NAAQS.

The annual average value for a given year is calculated using the quarterly average concentrations for that year, while the 24-hour value for a given year is calculated using the 98th percentile of 24-hour average concentrations for that year.[310] At the time the District compiled monitoring data for this purpose in January 2015, actual $PM_{2.5}$ measurements were available for 2013 and most of 2014 from the EPA's Air Quality System (AQS) database. For the remainder of the 2014 data, preliminary monitoring measurements were used for the latter portion of 2014 and, for four of the 16 monitors used in the analysis, the District used 2013 4th quarter data for the 2014 4th quarter data, since the 2014 filter data from those monitors were not yet available.[311]

Impracticability of Attaining the 1997 Annual $PM_{2.5}$ Standard by December 31, 2015

According to the District, the maximum 2015 annual average concentration at the Bakersfield-Planz site (which recorded the area's highest annual average in 2013, and is estimated to have the highest annual average in 2014) that will enable the site to show a design value at or below 15.0 $\mu g/m^3$ for 2015 is negative 2.4 $\mu g/m^3$.[312] In addition, the District calculates that the Hanford, Visalia-Church, and Bakersfield-California monitoring sites (which are in the three southern-most counties in the SJV) would have to each average under 10 $\mu g/m^3$, and states that such concentrations are unlikely given historical $PM_{2.5}$ concentrations in the SJV.[313] Based on these preliminary data and analyses, the 2015 $PM_{2.5}$ Plan concludes that it is impracticable for the Hanford, Visalia-Church, Bakersfield-California, and Bakersfield-Planz monitoring sites, to show an annual $PM_{2.5}$ NAAQS design value at or below 15.0 $\mu g/m^3$ by December 31, 2015.

The EPA independently evaluated 2013 and 2014 $PM_{2.5}$ air quality data

[305] SJVUAPCD, ''2007 Ozone Plan,'' April 30, 2007, which EPA approved on March 1, 2012. (78 FR 12652).

[306] **Source:** 2015 $PM_{2.5}$ Plan, Chapter 6, Figure 6–2 Illustration of Valley MPO Funding for Sample TCM Categories, p. 6–20. The funding in the 2015 FTIPs covers the federal fiscal years (*i.e.,* October 1–September 30) 2014/2015 through 2017/2018. An example 2015 FTIP, the *2015 Federal Transportation Improvement Program,* Fresno Council of Governments, is included in the docket for today's action and available at *http://www.fresnocog.org/sites/default/files/publications/FTIP/2015_FTIP/FINAL_2015_FTIP_8-13-14.pdf.*

[307] 2015 $PM_{2.5}$ Plan: CARB Resolution 15–9, May 21, 2015 (submitting the Plan to EPA as a SIP revision); SJVAPCD, Governing Board Resolution 15–4–7A, paragraph 1 (adopting the 2015 $PM_{2.5}$ Plan); and Chapter 4, p. 4–1.

[308] 2015 $PM_{2.5}$ Plan, Chapter 4, pp. 4–1 to 4–5.

[309] *Id.* at pp. 4–3 to 4–5.

[310] 40 CFR 50, Appendix N, sections 4.4 and 4.5, respectively.

[311] 2015 $PM_{2.5}$ Plan, Chapter 4, Table 4–1, p. 4–4.

[312] *Id.*

[313] *Id.* at p. 4–4.

that had been uploaded to AQS as of June 30, 2015, and as of January 20, 2016, to assess the District's representations.[314] Table 4 shows the annual average $PM_{2.5}$ concentrations that were recorded in 2013 and 2014 and that the EPA estimated for 2015 at selected monitoring sites. The average annual concentrations in 2013 and 2014 were higher than in 2012, and in several cases the 2013 and 2014 values were significantly higher than the 2012 value, especially at the Bakersfield-Planz monitoring site, whose annual average concentrations for 2013 and 2014 were each over 20 μg/m³.[315] Based on the annual average concentrations observed in 2013 and 2014, the EPA calculated the maximum annual average concentration for seven monitoring sites that would enable each site to show a 2015 annual average $PM_{2.5}$ design value at or below 15.04 μg/m³.[316]

The EPA found that four monitoring sites located in the three southern-most counties of the SJV would have to have 2015 annual mean concentrations 35% or more below their corresponding historical lows in order to attain by the end of 2015.[317] The most extreme example is the Bakersfield-Planz Rd. monitoring site, which would require approximately 95% below the previously recorded low.

TABLE 4—2013 AND 2014 ANNUAL AVERAGE $PM_{2.5}$ CONCENTRATIONS (IN μg/m³) FOR SELECTED SITES IN SJV AND CALCULATION OF ANNUAL AVERAGE MAXIMUM TO ATTAIN IN 2015

	Annual average in 2013 [a]	Annual average in 2014 [a]	EPA Estimate for max. 2015 annual average allowed to attain [b]	Lowest recorded annual average 1999–2014 (year) [b]	Max. 2015% below lowest recorded annual average
Hanford	18.18	17.47	9.47	14.79 (2012)	36
Visalia	18.90	17.88	8.34	13.58 (2010)	39
Bakersfield–California	19.95	18.55	6.62	13.03 (2012)	49
Bakersfield–Planz	22.79	21.61	0.72	14.45 (2011)	95

[a] 2014 AQS Design Value Report, AMP480.
[b] *See* Appendix A of the EPA's General TSD.

In sum, air quality data for the 2013–2014 period indicate that it is not practicable for the Hanford, Visalia-Church, Bakersfield-California, and Bakersfield-Planz monitoring sites to show an annual $PM_{2.5}$ NAAQS design value at or below 15.0 μg/m³ by December 31, 2015. While our analyses resulted in slightly different numbers for the maximum annual average concentrations allowed to attain for 2015, they are consistent with the analysis and conclusion in the 2015 $PM_{2.5}$ Plan that attainment is impracticable at these sites. As such, we propose to determine that the SJV area cannot practicably attain the 1997 annual $PM_{2.5}$ NAAQS by the applicable attainment date of December 31, 2015.

Impracticability of Attaining the 1997 24-Hour $PM_{2.5}$ Standard by December 31, 2015

According to the District, the maximum 2015 24-hour average $PM_{2.5}$ concentration at the Bakersfield-Planz site (which recorded the area's highest 24-hour average in 2013 and was estimated to have recorded the highest 24-hour average concentration in 2014) that will enable the site to show a design value at or below 65 μg/m³ for 2015 is 15.9 μg/m³.[318] In addition, the District states that other monitoring sites in the southern portion of the SJV would have to record improbably low 2015 average concentrations, of which the lowest are the Hanford and Bakersfield-California sites at 44.6 μg/m³ and 44.4 μg/m³, respectively.[319] Based on these preliminary data and analyses, the 2015 $PM_{2.5}$ Plan concludes that it is not possible for the Bakersfield-Planz monitoring site, and extremely unlikely for the Hanford and Bakersfield-California sites, to show a 24-hour $PM_{2.5}$ NAAQS design value at or below 65 μg/m³ by December 31, 2015.

As with the annual standard, the EPA independently evaluated 2013 and 2014 $PM_{2.5}$ air quality data available in AQS as of June 30, 2015, and as of January 20, 2016, to assess the District's representations.[320] Table 5 shows the 98th percentile 24-hour average $PM_{2.5}$ concentrations that were recorded in 2013 and 2014 and the maximum concentrations allowed to attain that the EPA estimated for 2015 at selected monitoring sites. The 98th percentile 24-hour concentrations in 2013 and 2014 were higher than in 2012, and in some cases the 2013 and 2014 values were significantly higher than the 2012 value, especially at the Bakersfield-Planz monitoring site, whose 98th percentile concentration for 2013 was over 95 μg/m³.[321] Based on the 98th percentile values observed in 2013 and 2014, the EPA calculated the maximum 98th percentile 24-hour concentration for six monitoring sites that would enable the site to show a 2015 24-hour $PM_{2.5}$ design value at or below 65.4 μg/m³.

The EPA found that the Bakersfield-Planz monitoring site would have to have a 2015 annual mean concentration recorded at 44% below its

[314] *See* Section III (''Analysis of Practicability of Attainment'') and Appendix A (''Data Worksheets for Analysis of Practicability of Attainment'') of the EPA's General TSD.

[315] The 2015 $PM_{2.5}$ Plan cites weather conditions associated with the extreme drought in California, including low precipitation, high stagnation, and strong inversions, among the reasons for the high $PM_{2.5}$ concentrations observed in the winter of 2013–2014. *See* 2015 $PM_{2.5}$ Plan, Chapter 4, pp. 4–2 to 4–3 and 4–5.

[316] The small differences between the District's and EPA's calculations of ''maximum 2015'' values are due to EPA's use of certified, rather than preliminary, 2014 data and different rounding conventions. EPA's calculations of maximum 2015 values are based on the rounding convention in 40 CFR part 50, appendix N, which provides that intermediate calculations are not rounded, and that a design value with a decimal lower than 15.05 μg/m³ is rounded down to 15.0 μg/m³. *See* 40 CFR part 50, appendix N, section 4.3. In computing the maximum 2015 concentration consistent with attainment and consistent with 2013 and 2014 annual mean concentrations, EPA did not round the 2013 and 2014 means in the intermediate steps of the calculation, and used 15.04 μg/m³ as the highest design value consistent with the standard. In contrast, the calculations presented in the 2015 $PM_{2.5}$ Plan rounded the 2013 and 2014 means to one decimal place initially, and used 15.00 μg/m³ as the highest attaining design value.

[317] *See* section III and Appendix A of the EPA's General TSD.

[318] 2015 $PM_{2.5}$ Plan, Chapter 4, Table 4–2, p. 4–5.

[319] *Id.*

[320] *See* section III and Appendix A of the EPA's General TSD.

[321] The 2015 $PM_{2.5}$ Plan cites weather conditions associated with the extreme drought in California, including low precipitation, high stagnation, and strong inversions, among the reasons for the high $PM_{2.5}$ concentrations observed in the winter of 2013–2014. *See* 2015 $PM_{2.5}$ Plan, Chapter 4, pp. 4–2 to 4–3 and 4–5.

corresponding historical low in order to attain by the end of 2015.[322]

TABLE 5—2013 AND 2014 24-HOUR $PM_{2.5}$ CONCENTRATIONS (IN μg/m³) FOR SELECTED SITES IN SJV AND CALCULATION OF MAXIMUM 98TH PERCENTILE CONCENTRATIONS FOR 2015

	98th Percentile in 2013 [a]	98th Percentile in 2014 [a]	EPA estimate for max. 2015 98th percentile allowed to attain [b]	Lowest recorded 98th percentile 1999–2014 (year) [b]	Max. 2015% below lowest recorded annual average
Hanford	67.6	81.9	46.7	48.3 (2012)	3
Bakersfield–California	71.8	79.9	44.5	53.3 (2010)	17
Bakersfield–Planz	96.7	76.7	22.8	40.6 (2012)	44

[a] 2014 AQS Design Value Report, AMP480.
[b] Appendix A of the EPA's General TSD.

For these three sites, the EPA's analysis largely confirms the analysis presented in the 2015 $PM_{2.5}$ Plan of the maximum 98th percentile concentration allowed for the SJV to attain the 1997 24-hour $PM_{2.5}$ standard by December 31, 2015 (*e.g.,* EPA estimated maximum is 22.8 μg/m³ at Bakersfield-Planz compared to District estimated maximum of 15.9 μg/m³, both of which are well below the historic low). For the Bakersfield-California site, the estimated maximum 98th percentile concentrations are 17% below the historic low, which is quite low, while the estimated maximum 98th percentile concentration at Hanford site is not drastically different than its historic low. However, such values would appear very unlikely given the 98th percentile values in 2013 and 2014 and do not alter the clear impracticability of attaining the 1997 24-hour $PM_{2.5}$ standard at the Bakersfield-Planz site.

In sum, air quality data for the 2013–2014 period indicate that it is not practicable for the Bakersfield-Planz monitoring site to show an annual $PM_{2.5}$ NAAQS design value at or below 15.0 μg/m³ by December 31, 2015. While our analysis resulted in slightly different numbers for the maximum annual average concentrations for 2015, they are consistent with the Plan's analysis and conclusion that attainment is impracticable at this site. As such, we propose to determine that the SJV area cannot practicably attain the 1997 24-hour $PM_{2.5}$ NAAQS by the applicable attainment date of December 31, 2015.

3. Compliance With All Requirements and Commitments in the Implementation Plan

We interpret this criterion to mean that the State has implemented the control measures and commitments in the plan revisions it has submitted to address the applicable requirements in CAA sections 172 and 189 for $PM_{2.5}$ nonattainment areas. For a Serious area attainment date extension request being submitted simultaneously with the initial Serious area attainment plan for the area, the EPA proposes to read section 188(e) not to require the area to have a fully approved Moderate area attainment plan and to allow for extension of the attainment date if the area has complied with all Moderate area requirements and commitments pertaining to that area in the State's submitted Moderate area implementation plan. This interpretation is based on the plain language of section 188(e), which requires the State to comply with ''all requirements and commitments pertaining to [the] area in the implementation plan.'' [323]

Between 2007 and 2011, California made six SIP submissions to address nonattainment area planning requirements for the 1997 $PM_{2.5}$ NAAQS in the SJV,[324] which we refer to collectively as the ''2008 $PM_{2.5}$ Plan.'' On November 9, 2011, the EPA approved all elements of the 2008 $PM_{2.5}$ Plan except for the contingency measures, which the EPA disapproved.[325] As part of this action, the EPA approved, among other things, commitments by CARB and the SJVUAPCD to take specific actions with respect to identified control measures and to achieve specific amounts of NO_X, SO_X, and direct $PM_{2.5}$ emission reductions by 2014.[326] In July 2013, the State submitted a revised $PM_{2.5}$ contingency measure plan for the SJV, which the EPA fully approved in May 2014.[327]

On May 20, 2015, the Ninth Circuit Court of Appeals issued its decision in a challenge to the EPA's November 9, 2011 action on the 2008 $PM_{2.5}$ Plan.[328] In *Committee for a Better Arvin et. al* v. *EPA,* 786 F.3d 1169 (9th Cir. 2015) (*CBA*), the court held that the EPA violated the CAA by approving the 2008 $PM_{2.5}$ Plan even though the plan did not include certain state-adopted mobile source emission standards on which the plan relied to achieve its emission reduction goals.[329] The *CBA* court remanded the EPA's action on the 2008 $PM_{2.5}$ Plan for further proceedings consistent with the decision but did not vacate the EPA's action.[330] Thus, absent an EPA rulemaking to withdraw or revise the EPA's November 2011 approval of the control measure and emission reduction commitments in the 2008 $PM_{2.5}$ Plan, all of these commitments remain enforceable components of the California SIP.[331]

The specific State and District commitments that the EPA approved into the California SIP as part of the 2008 $PM_{2.5}$ Plan are as follows:

(1) A commitment by the District to ''adopt and implement the rules and measures in the 2008 $PM_{2.5}$ Plan'' in accordance with the timetable specified in Table 6–2 of the 2008 $PM_{2.5}$ Plan, as

[322] *See* Appendix A of the EPA's General TSD.

[323] The Ninth Circuit Court of Appeals upheld this interpretation of section 188(e) in *Vigil* v. *Leavitt,* 366 F.3d 1025, amended at 381 F.3d 826 (9th Cir. 2004).

[324] 76 FR 69896 at n. 2 (November 9, 2011).

[325] *Id.* at 69924.

[326] *Id.* at 69926 (codified at 40 CFR 52.220(c)(356)(ii)(B)(*2*), 52.220(c)(392)(ii)(A)(*2*), and 52.220(c)(395)(ii)(A)(*2*)).

[327] 79 FR 29327 (May 22, 2014).

[328] *Committee for a Better Arvin et al* v. *EPA,* 786 F.3d 1169 *(9th Cir. 2015).*

[329] *Id.*

[330] *Id.*

[331] As a consequence of the *CBA* decision, EPA recently proposed to withdraw its May 2014 approval of the District's $PM_{2.5}$ contingency measure submission and to disapprove this submission in its entirety. 80 FR 49190 (August 17, 2015). Upon EPA's final withdrawal of this action and disapproval of the $PM_{2.5}$ contingency measure submission, the measures and commitments in this submission will no longer be required components of the California SIP.

amended June 17, 2010, and to submit these rules and measures to CARB for transmittal to the EPA as SIP revisions; [332]

(2) A commitment by CARB to propose specific measures identified in Appendix B of the ''Progress Report on Implementation of $PM_{2.5}$ State Implementation Plans (SIP) for the South Coast and San Joaquin Valley Air Basins and Proposed SIP Revisions,'' dated April 28, 2011 (2011 Progress Report), in accordance with the timetable specified therein; [333]

(3) A commitment by the District to achieve a total of 8.97 tpd of NO_X emission reductions, 6.7 tpd of direct $PM_{2.5}$ emission reductions, and 0.92 tpd of SO_X emission reductions by 2014 as described in Table 6–3a, Table 6–3b, and Table 6–3c, respectively, of the 2008 $PM_{2.5}$ Plan; and

(4) A commitment by CARB to achieve a total of 17.1 tons per day (tpd) of NO_X emission reductions and 2.3 tpd of direct $PM_{2.5}$ emission reductions by 2014 as described in CARB Resolution No. 07–28, Attachment B, as amended in 2009 and 2011.[334]

As of November 9, 2011, the date of the EPA's final action on the 2008 $PM_{2.5}$ Plan, CARB and the District had each satisfied substantial portions of these control measure and emission reduction commitments. Specifically, the District had adopted 12 of the 13 measures that it had committed to adopt and implement as part of its control strategy for attaining the $PM_{2.5}$ standards, leaving one additional measure that was scheduled for adoption in 2014 (Rule 4905 (''Natural Gas-Fired, Fan Type Residential Central Furnaces'').[335] CARB had proposed action on six of the seven measures that it had committed to propose for Board consideration as part of its $PM_{2.5}$ control strategy for the SJV, leaving one additional measure that was scheduled for proposal in 2013 (''New Emissions Standards for Recreational Boats'').[336] Finally, together CARB and the District had achieved all of the SO_X emission reduction commitments and substantial portions of the direct $PM_{2.5}$ and NO_X emission reduction commitments through implementation of State and District control strategy measures, leaving 3.0 tpd of direct $PM_{2.5}$ emission reductions and 12.9 tpd of NO_X emission reductions yet to be achieved by the beginning of 2014.[337]

The CARB Staff Report for the 2015 $PM_{2.5}$ Plan [338] contains the State's demonstration that both CARB and the District have satisfied the commitments in the 2008 $PM_{2.5}$ Plan that remained outstanding as of November 9, 2011, as follows. First, on January 22, 2015, the District adopted Rule 4905 and on April 7, 2015, CARB submitted this rule to the EPA as a revision to the California SIP.[339] Second, on February 19, 2015, CARB proposed for Board consideration, and the Board adopted, new emission standards for recreational boats entitled ''Evaporative Emissions Control Requirements for Spark-Ignited Watercraft.'' [340] These State and District rulemaking actions satisfied the last remaining commitments concerning specific control measures in the 2008 $PM_{2.5}$ Plan.

With respect to the outstanding emission reduction commitments (also called ''aggregate commitments''), Tables 9 and 10 of the CARB Staff Report, as amended by CARB's Technical Clarifications, identify nine specific State and District control measures that, according to CARB, achieved emission reductions beyond those already credited toward the 2008 $PM_{2.5}$ Plan and that satisfy the State's remaining 2014 emission reduction obligations. These measures are identified in Table 6.

TABLE 6—2008 $PM_{2.5}$ PLAN AGGREGATE COMMITMENT—STATE AND DISTRICT-IDENTIFIED MEASURES

Measure	2014 Emission reductions (annual average tpd)	
	NO_X	Direct $PM_{2.5}$
Rule 4320 (Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr)	1.8	0.0
Rule 9510 (Indirect Source Review)	1.0	0.1
Woodstove Replacements	0.0	0.1
District Funded Incentive-Based Emission Reduction Measures	1.5	0.1
Rule 9410 (Employer Based Trip Reduction)	0.3	0.0
Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters)	0.0	1.3
State Funded Incentive-Based Emission Reduction Measures	7.8	0.2
CARB Cleaner In-Use Heavy Duty Trucks Measure	11.5	0.1
CARB Portable Equipment Registration Program (PERP) and Portable Engine ATCM	2.5	0.2
Total Emission Reductions	26.4	2.1

Source: CARB Staff Report, pp. 21, 22 and Technical Clarifications, pp. 2 to 4.

We have reviewed the State's demonstration with respect to each of these nine measures and, for the reasons provided below, we propose to find that all but one may be credited toward the State's outstanding 2014 emission reduction obligations.

First, with respect to SJVUAPCD's Rule 4320 (''Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr''), also called the ''AERO Rule,'' the EPA approved this rule as adopted October 2008 into the

[332] 40 CFR 52.220(c)(392)(ii)(A)(*2*), SJVUAPCD Governing Board Resolution No. 08–04–10 (April 30, 2008), and SJVUAPCD Governing Board Resolution No. 10–06–18 (June 17, 2010); *see also* 76 FR 69896 at 69921, Table 1 (November 9, 2011).

[333] 40 CFR 52.220(c)(395)(ii)(A)(*2*), CARB Resolution No. 07–28, Attachment B (September 27, 2007), CARB Resolution No. 09–34 (April 24, 2009), and CARB Resolution No. 11–24 (April 28, 2011); *see also* 76 FR 69896 at 69921–69922, Table 2 (November 9, 2011).

[334] 40 CFR 52.220(c)(356)(ii)(B)(*2*).

[335] 76 FR 69896 at 69921, Table 1 (''San Joaquin Valley Air Pollution Control District 2008 $PM_{2.5}$ Plan Specific Rule Commitments'').

[336] 76 FR 69896 at 69922, Table 2 (November 9, 2011) (''2007 State Strategy Defined Measures Schedule for Consideration and Current Status'').

[337] *Id.* at 69923, Table 4 (''Reductions Needed for Attainment Remaining as Commitments Based on SIP-Creditable Measures'').

[338] 2015 $PM_{2.5}$ Plan, CARB Staff Report, pp. 17–22 and Appendix B.

[339] CARB Staff Report, Table 7, p. 19 and letter dated April 7, 2015, from Richard Corey, Executive Officer, CARB, to Jared Blumenfeld, Regional Administrator, EPA Region 9 (transmitting air district regulations to EPA as California SIP revisions).

[340] CARB Staff Report, Table 8, p. 20; *see also http://www.arb.ca.gov/regact/2015/simw2015/simw2015.htm.*

California SIP on March 25, 2011 [341] but did not credit the rule with any emission reductions as part of the attainment demonstration in the 2008 $PM_{2.5}$ Plan.[342] In the proposal to approve this rule into the SIP, the EPA stated that because this rule allows regulated entities to pay a fee in lieu of meeting NO_X emission limits, the State would need to demonstrate that the fee provisions achieve emission reductions that are quantifiable, surplus, enforceable, and permanent consistent with EPA guidance before relying on this rule for credit in an attainment plan.[343]

In the CARB Staff Report, the State explained that it now has documentation showing that operators of 472 of the units subject to Rule 4320 chose to pay fees and that operators of the remaining 692 units subject to the rule chose to retrofit their equipment to comply with the NO_X emission limits in the rule.[344] CARB also explained that, based on these enforceable emission limits, the District estimated that the operators of the 692 units that did not pay fees had achieved 1.8 tpd of actual NO_X emission reductions by the beginning of 2014, based on an operating capacity of 50% or 75%.[345] We find this documentation adequate to credit Rule 4320 with 1.8 tpd of NO_X emission reductions toward the State's outstanding 2014 emission reduction obligation.

Second, with respect to SJVUAPCD's Rule 9510 (''Indirect Source Review''), the EPA approved this rule as adopted December 2005 into the California SIP on May 9, 2011 [346] but did not credit the rule with any emission reductions as part of the attainment demonstration in the 2008 $PM_{2.5}$ Plan.[347] In the final rule to approve Rule 9510 into the SIP, the EPA identified a number of concerns about the enforceability of the rule's provisions, *e.g.,* provisions that allow project developers to pay a fee instead of implementing on-site pollution mitigation plans, and noted that the State would need to resolve these enforceability issues before relying on this rule for credit in an attainment plan.[348]

In the CARB Staff Report, the State explained that it now has documentation of the number of projects that have complied with the rule through on-site mitigation (instead of payment of a fee) and the associated reductions in on-site emissions of NO_X and PM_{10}.[349] The project information provided in Appendix B–2 of the CARB Staff Report, however, is not adequate for the EPA to determine what types of mitigation plans were implemented, to verify that those plans were implemented as proposed, or to estimate the associated emission reductions. Furthermore, it is unclear whether the District or any other state or local agency is authorized to enforce these mitigation plans. We find this documentation insufficient to credit Rule 9510 with any emission reductions toward the State's outstanding 2014 emission reduction obligation.

Third, with respect to wood stove replacements, the CARB Staff Report explains that the District implements a voluntary wood stove replacement program that provides funding for residents to replace less efficient wood stoves with more efficient gas-burning devices.[350] CARB also notes that the District has provided a list of wood stoves replaced through this program as of December 31, 2013, together with documentation of the calculation methodologies and related emission factors that it used to calculate the direct $PM_{2.5}$ emission reductions achieved by these wood stove replacements.[351] All wood stoves are installed by a District contracted retailer, with pre- and post-installation photographs provided to the District. Old wood or pellet inserts/stoves are removed and surrendered to a licensed recycling/dismantling facility within 60 days of installation.[352] We find this documentation adequate to credit the District's wood stove replacement program with 0.1 tpd of direct $PM_{2.5}$ emission reductions toward the State's outstanding 2014 emission reduction obligation.

Fourth, with respect to District-funded incentive programs, CARB provided a list of stationary and portable agricultural engines and off-road agricultural equipment that were repowered, retrofitted with controls, or replaced with newer equipment through incentive funds disbursed by the District pursuant to the Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program). Specifically, the CARB Staff Report documents the State's bases for concluding that a total of 824 incentive projects implemented in the SJV between January 2009 and December 2013 in accordance with specified portions of the Carl Moyer Program Guidelines have achieved a total of 1.8 tons per day (tpd) of NO_X emission reductions and 0.1 tpd of $PM_{2.5}$ emission reductions in the SJV, which may be credited toward the State's 2014 emission reduction commitment.[353] The EPA previously reviewed the identified portions of the Carl Moyer Program Guidelines and found that they adequately address the EPA's recommended integrity elements for economic incentive programs.[354] We find this documentation sufficient to credit these District-funded projects with 1.8 tpd of NO_X emission reductions and 0.1 tpd of direct $PM_{2.5}$ emission reductions toward the State's outstanding 2014 emission reduction obligation.

Fifth, with respect to SJVUAPCD's Rule 9410 (''Employer Based Trip Reduction''), CARB submitted this rule as adopted December 2009 to the EPA as a revision to the California SIP on May 17, 2010, and on December 11, 2015, the EPA fully approved the rule into the SIP.[355] Accordingly, the emission reductions that the State and District have attributed to this rule (0.3 tpd of NO_X emission reductions) are creditable toward the State's outstanding 2014 emission reduction obligation. As part of the EPA's proposed action on Rule 9410, the EPA evaluated the District's estimates of emission reductions achieved by the rule and found the District's calculations to be technically sound and

[341] 76 FR 16696 (March 25, 2011).

[342] 2008 $PM_{2.5}$ Plan TSD at pp. 93–94, Table F–4 (September 30, 2011); *see also* CARB Staff Report, Appendix B at p. B–7 and Table B–8.

[343] 75 FR 68294 at 68295 (November 5, 2010).

[344] CARB Staff Report, Appendix B at p. B–7.

[345] *Id.* at p. B–8, Table B–8.

[346] 76 FR 26609 (May 9, 2011).

[347] 2008 $PM_{2.5}$ Plan TSD at pp. 100–101; *see also* CARB Staff Report, Appendix B at pp. B–6 and B–7.

[348] 76 FR 26609 at 26612–26613 (May 9, 2011).

[349] CARB Staff Report at p. B–6, B–7 (referencing list of projects in Appendix B–2).

[350] *Id.* at pp. B–5.

[351] *Id.* at pp. B–5, B–6 and Appendix B–1.

[352] *See* SJVAPCD Burn Cleaner Voucher Guidelines, dated December 2014, available at: *http://valleyair.org/grants/documents/burncleaner/2014/BC_Guidelines.pdf*; and SJVAPCD Burn Cleaner Voucher Application—Phase 1, dated December 2014, available at: *http://valleyair.org/grants/documents/burncleaner/2014/BC_VoucherApp.pdf*.

[353] CARB Staff Report, pp. B–9 to B–12; Technical Clarifications at 2–4; and Revised Appendix B–3.

[354] The specified portions of the guidelines that apply to the identified projects are contained in The Carl Moyer Program Guidelines, Approved Revision 2005; The Carl Moyer Program Guidelines, Approved Revision 2008; and The Carl Moyer Program Guidelines, Approved Revision 2011. *See* CARB Staff Report at Table B–10. EPA has reviewed these portions of the Carl Moyer Program Guidelines and found that they adequately address EPA's recommended integrity elements for economic incentive programs. 79 FR 29327 (May 22, 2014); *see also* 80 FR 51147 (August 24, 2015).

[355] EPA, Final rule, ''Approval and Promulgation of Implementation Plans; California; San Joaquin Valley Unified Air Pollution Control District; Employer Based Trip Reduction Programs,'' pre-publication notice signed December 11, 2015.

generally consistent with the planning assumptions in the 2008 $PM_{2.5}$ Plan.[356]

Sixth, with respect to SJVUAPCD's Rule 4901 (''Wood Burning Fireplaces and Wood Burning Heaters''), the EPA approved this rule as adopted October 2008 into the California SIP on November 10, 2009 [357] and credited the rule with 1.08 tpd of direct $PM_{2.5}$ emission reductions in 2014 as part of the attainment demonstration in the 2008 $PM_{2.5}$ Plan.[358] In the CARB Staff Report, the State explained that it now has documentation of additional direct $PM_{2.5}$ emission reductions achieved by this rule based on an updated methodology for calculating emission reductions from its curtailment program. Specifically, the District reviewed ambient air quality data for a more recent period (2009–2013) to determine the number of ''No Burn'' days that would have been required under the mandatory curtailment level (30 $\mu g/m^3$) in the October 2008 version of Rule 4901. This updated air quality data resulted in a larger number of ''No Burn'' days compared to the District's prior calculation, which was based on 2006 air quality data.[359] We find this documentation adequate to credit Rule 4901 with 1.3 tpd of direct $PM_{2.5}$ emission reductions toward the State's outstanding 2014 emission reduction obligation.

Seventh, with respect to State Funded Incentive-Based Emission Reduction Measures, CARB submitted the ''Report on Reductions Achieved from Incentive-based Emission Reduction Measures in the San Joaquin Valley'' (Emission Reduction Report) to the EPA as a revision to the California SIP on November 17, 2014,[360] and on August 24, 2015, the EPA proposed to fully approve this report into the SIP.[361] As part of this proposal, the EPA evaluated the State's demonstration that specified portions of the Carl Moyer Program and Prop 1B Program guidelines adequately address the EPA's recommended integrity elements for economic incentive programs and that the identified projects funded pursuant to these guidelines achieved 7.8 tpd of NO_X emission reductions and 0.2 tpd of direct $PM_{2.5}$ emission reductions by the beginning of 2014.[362] Upon final approval of this demonstration into the California SIP, these emission reductions would be creditable toward the State's 2014 emission reduction obligation. Thus, final action by the EPA to fully approve the Emission Reduction Report before or concurrent with our final action on the 2015 $PM_{2.5}$ Plan would suffice to credit these state-funded projects with 7.8 tpd of NO_X emission reductions and 0.2 tpd of direct $PM_{2.5}$ emission reductions toward the State's outstanding 2014 emission reduction obligation.

Eighth, with respect to CARB's Cleaner In-Use Heavy Duty Trucks measure (also called the Truck and Bus Regulation and Drayage Truck Regulation), the EPA approved these rules as adopted September 2011 into the California SIP on April 4, 2012 [363] and credited the rules with 1.1 tpd of NO_X emission reductions and 1.7 tpd of direct $PM_{2.5}$ emission reductions in 2014 as part of the attainment demonstration in the 2008 $PM_{2.5}$ Plan.[364] In the CARB Staff Report, the State explained that it now has documentation of additional NO_X and direct $PM_{2.5}$ emission reductions achieved by these rules by the beginning of 2014, based on current compliance reports indicating that diesel particulate filters (DPFs) are more efficient than original estimates and that a larger than expected number of truck and bus owners had purchased new vehicles (which are cleaner than retrofits) rather than installing retrofit DPFs.[365] We find this documentation adequate to credit CARB's Cleaner In-Use Heavy Duty Trucks measure with 11.5 tpd of NO_X emission reductions and 0.1 tpd of direct $PM_{2.5}$ emission reductions toward the State's outstanding 2014 emission reduction obligation.

Finally, with respect to CARB's Portable Equipment Registration Program (PERP) and Portable Engine Airborne Toxic Control Measure (Portable Engine ATCM), CARB adopted these programs in 1997 and 2004, respectively, to reduce pollution by requiring the removal of uncertified engines from the registered fleet of nonroad engines operating in California.[366] The EPA did not credit either of these programs with emission reductions as part of the attainment demonstration in the 2008 $PM_{2.5}$ Plan.[367] On December 6, 2012, the EPA granted California's request for authorization under CAA section 209(e)(2) to implement both the PERP and the Portable Engine ATCM.[368] On August 14, 2015, CARB submitted these measures to the EPA for SIP approval and on November 12, 2015, the EPA proposed to approve both measures as revisions to the California SIP.[369] Upon final approval of these measures into the SIP, their requirements will be federally enforceable and the associated emission reductions will be creditable for attainment planning purposes in the SJV. Thus, final action by the EPA to fully approve the PERP and the Portable Engine ATCM before or concurrent with our final action on the 2015 $PM_{2.5}$ Plan would suffice to credit these measures with 2.5 tpd of NO_X emission reductions and 0.2 tpd of $PM_{2.5}$ reductions toward the State's outstanding 2014 emission reduction obligation.

According to the CARB Staff Report, implementation of these control measures resulted in NO_X emission reductions that exceeded the State's outstanding NO_X commitment by 13.9 tpd by the beginning of 2014.[370] Citing air quality modeling conducted as part of the 2008 $PM_{2.5}$ Plan, CARB stated that a reduction of 9 tpd of NO_X emissions provides an air quality improvement equivalent to a 1 tpd reduction in directly emitted $PM_{2.5}$. On this basis, CARB concluded that an 8.1 tpd portion of the 13.9 tpd of surplus NO_X reductions achieved through implementation of the identified State and District measures adequately covered the small shortfall (0.9 tpd) in required reductions of direct $PM_{2.5}$.[371]

Table 7 identifies the State and District measures that the EPA is proposing to credit toward the State's outstanding 2014 emission reduction obligations, the amount of SIP-creditable emission reductions for each measure, and the 9:1 NO_X for $PM_{2.5}$ trading ratio [372] calculation that the EPA is proposing to accept for this purpose. The total amount of SIP-creditable NO_X emission reductions associated with the identified control measures (25.4 tpd) exceeds the State's outstanding NO_X emission reduction commitment (12.9

[356] 80 FR 51153 (August 24, 2015).

[357] 74 FR 57907 (November 10, 2009).

[358] 2008 $PM_{2.5}$ Plan TSD at p. 93, Table F–4 (September 30, 2011); *see also* 76 FR 69896 at 69921, Table 1 (November 9, 2011).

[359] 2015 $PM_{2.5}$ Plan, Technical Clarifications, p. 1; and CARB Staff Report, Appendix B, p. B–7.

[360] CARB Staff Report, Appendix B at p. B–2.

[361] 80 FR 51147 (August 24, 2015).

[362] *Id.*

[363] 77 FR 20308 (April 4, 2012).

[364] 2008 $PM_{2.5}$ Plan TSD, Table F–8, p. 99 (September 30, 2011).

[365] CARB Staff Report, Appendix B, pp. B–2 to B–4.

[366] *Id.* at pp. B–4, B–5 and Technical Clarifications, p. 3.

[367] 2008 $PM_{2.5}$ Plan TSD, Table F–8, p. 99 (September 30, 2011).

[368] 77 FR 72846 and 77 FR 72851 (December 6, 2012).

[369] Letter dated August 14, 2015, from Richard W. Corey, Executive Officer, California Air Resources Board, to Jared Blumenfeld, Regional Administrator, EPA Region 9, with attachments. 80 FR 69915 (November 12, 2015).

[370] CARB Staff Report at pp. 21, 22.

[371] *Id.*

[372] We use ''trading ratio'' in this action to refer to the extent to which reductions of one pollutant are substituted for necessary reductions of another pollutant.

tpd) by 12.5 tpd.[373] We believe the technical bases for a 9:1 NO_X for $PM_{2.5}$ trading ratio are generally sound and have therefore used this trading ratio to credit the State with 1 additional tpd of $PM_{2.5}$ emission reduction (based on 9 tpd of ''excess'' NO_X emission reductions) toward its outstanding 2014 commitment. In evaluating the interpollutant trading used for the aggregate commitments (as well as for Reasonable Further Progress and for Motor Vehicle Emissions Budgets for conformity), the EPA considered the regulatory basis for allowing interpollutant trading, 24-hour and annual averaging times, the pollutant trading direction, the geographical extent of emissions, the conservativeness and the numerical stability of the ratio, and the geographical variation of the trading ratio. For further discussion of our evaluation of the 9:1 NO_X to $PM_{2.5}$ trading ratio for purposes of the aggregate commitment, please *see* section IV.C of the EPA's ''Technical Support Document for EPA's Evaluation of Interpollutant Trading Ratios For Fine Particulate Matter Emissions in the San Joaquin Valley Air Pollution Control District,'' January 2016 (''Interpollutant Trading Ratios TSD'').

TABLE 7—2008 $PM_{2.5}$ PLAN AGGREGATE COMMITMENT—EPA PROPOSED EMISSION REDUCTION CREDITS FOR MEASURES IN CARB COMPLIANCE DEMONSTRATION

Measure	2014 emission reductions (annual average tpd)	
	NO_X	Direct $PM_{2.5}$
Rule 4320 (Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr)	1.8	0.0
Rule 9510 (Indirect Source Review)	0.0	0.0
Woodstove Replacements	0.0	0.1
District Funded Incentive-Based Emission Reduction Measures	1.5	0.1
Rule 9410 (Employer Based Trip Reduction)	0.3	0.0
Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters)	0.0	1.3
State Funded Incentive-Based Emission Reduction Measures	7.8	0.2
CARB Cleaner In-Use Heavy Duty Trucks Measure	11.5	0.1
CARB Portable Equipment Registration Program (PERP) and Portable Engine ATCM	2.5	0.2
Total SIP-Creditable Emission Reductions from State and District Measures	25.4	2.0
NO_X to $PM_{2.5}$ Emissions Equivalence (9:1)	−9.0	1.0
Total Emission Reductions Achieved	16.4	3.0

In sum, the CARB Staff Report demonstrates that implementation of State and District measures achieved a total of 16.4 tpd of NO_X emission reductions and 3.0 tpd of direct $PM_{2.5}$ emission reductions that have not previously been credited as part of the attainment demonstration in the 2008 $PM_{2.5}$ Plan and that may, therefore, be credited toward the State's outstanding obligation to achieve 12.9 tpd of NO_X emission reductions and 3.0 tpd of direct $PM_{2.5}$ emission reductions by the beginning of 2014.

Based on these evaluations, we propose to determine that California has complied with all requirements and commitments pertaining to the SJV area in the implementation plan.

4. Demonstration That the Implementation Plan Includes the Most Stringent Measures

We interpret this criterion to mean that the State must demonstrate to the EPA's satisfaction that its serious area plan includes the most stringent measures that are included in the implementation plan of any state, or achieved in practice in any state, and can feasibly be implemented in the area.

As discussed above in section V.D, because of the substantial overlap in the source categories and controls evaluated for BACM and those evaluated for MSM, we present our evaluation of the 2015 $PM_{2.5}$ Plan's provisions for including MSM alongside our evaluation of the Plan's provisions for implementing BACM for each identified source category. For the reasons provided in section V.D and further in the EPA's SJV Rules TSD, we propose to determine that the 2015 $PM_{2.5}$ Plan provides for the implementation of MSM for sources of direct $PM_{2.5}$ and $PM_{2.5}$ precursors as expeditiously as practicable, in accordance with the requirement in CAA section 188(e).

5. Demonstration of Attainment by the Most Expeditious Alternative Date Practicable

Section 189(b)(1)(A) of the CAA requires that each Serious area plan include a demonstration (including air quality modeling) that the plan provides for attainment of the $PM_{2.5}$ NAAQS by the applicable attainment date or, where the State is seeking an extension of the attainment date under section 188(e), a demonstration that attainment by that date is impracticable and that the plan provides for attainment by the most expeditious alternative date practicable. We discuss below our evaluation of the modeling approach in the Plan, the State's basis for excluding one 24-hour data point from the modeling analysis, and the control strategy in the Plan for attaining the 1997 annual and 24-hour $PM_{2.5}$ NAAQS by the most expeditious alternative dates practicable.

Evaluation of Air Quality Modeling Approach and Results

The EPA's $PM_{2.5}$ modeling guidance[374] (''Modeling Guidance'' and

[373] As explained in this section, we find CARB's documentation insufficient to credit Rule 9510 with any emission reductions toward the State's outstanding 2014 emission reduction obligation and, therefore, do not entirely agree with CARB's conclusion that it achieved 13.9 tpd of NO_X emission reductions in excess of its outstanding commitments. The difference between the 25.4 tpd of NO_X emission reductions achieved by the control measures identified in Table 7 and the State's outstanding 12.9 tpd NO_X emission reduction commitment is 12.5 tpd of ''excess'' NO_X emission reductions.

[374] ''Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, $PM_{2.5}$, and Regional

''Modeling Guidance Update'') recommends that a photochemical model, such as CAMx or CMAQ, be used to simulate a base case, with meteorological and emissions inputs reflecting a base case year, to replicate concentrations monitored in that year. The model application to the base case year undergoes a performance evaluation to ensure that it satisfactorily agrees with concentrations monitored in that year. The model may then be used to simulate emissions occurring in other years required for a plan, namely the base year (which may differ from the base case year) and future year.[375] The modeled response to the emission changes between those years is used to calculate Relative Response Factors (RRFs), which are applied to the design value in the base year to estimate the projected design value in the future year for comparison against the NAAQS. Separate RRFs are estimated for each chemical species component of $PM_{2.5}$, and for each quarter of the year, to reflect their differing responses to seasonal meteorological conditions and emissions. Since each species is handled separately, before applying an RRF the base year design value must be speciated using available chemical species measurements, that is, each day's measured $PM_{2.5}$ comprising the design value must be split into its species components. The Modeling Guidance provides additional detail on the recommended approach.[376]

The attainment demonstration in the 2015 $PM_{2.5}$ Plan is based on modeling performed for the 2008 $PM_{2.5}$ Plan, but that modeling is used in a streamlined way, by employing scaling. The attainment demonstration approach in the 2015 $PM_{2.5}$ Plan is covered in its Chapter 4 (''Classification and Attainment'') and Appendix F (''Attainment Demonstration''), with several further details in Appendix A (''Weight of Evidence Analysis'') of the CARB Staff Report. For the modeling used in this Plan, the base case year was 2000, the base year was 2012, and the future years were 2018 and 2020 for the 24-hour and annual $PM_{2.5}$ standards, respectively. CARB scaled the results from modeling performed for the 2008 $PM_{2.5}$ Plan, assuming the same relative response to emission changes applies in the time frame for the current Plan. Starting from the RRFs from the 2008 $PM_{2.5}$ Plan, which reflect the emission changes from the base year to the future year in that plan (2005 to 2014), CARB scaled those RRFs to reflect the current 2015 $PM_{2.5}$ Plan's base year to future year emission changes (2012 to 2020 for the annual standard, and 2012 to 2018 for the 24-hour standard).

The formula in the 2015 $PM_{2.5}$ Plan [377] for scaling an RRF is based on the definition of an RRF as (modeled future concentration)/(modeled base year concentration), and on the assumption that the modeled percent change in concentration per percent change in emissions is the same for the 2015 $PM_{2.5}$ Plan as it was for the 2008 $PM_{2.5}$ Plan. As shown in section IV.A of the EPA's General TSD for this action, these assumptions lead to the Plan formula. Since the RRF includes the modeled effect of emission changes, accounting for their temporal and spatial distribution and their chemistry, the scaling approach used in the 2015 $PM_{2.5}$ Plan differs from a simple ''rollback'' scaling (which would merely assume that the percent concentration change is identical to the percent emissions change).

CARB's procedure for using emissions from the two plans in the RRF scaling formula differed to some extent between the two plans due to data availability, even though ideally they would be treated in the same way. The reason the scaling is being done rather than new modeling is that modeling inventories were not available for the base and future years of the 2015 $PM_{2.5}$ Plan. Only the planning inventories are available; they cover all the source categories, but do not reflect the allocation of the emissions to all the grid squares in the modeling domain and to all the hours of the year, a considerable undertaking necessary for input to the model. Absent the future modeling inventories, the most consistent way to perform the scaling would be to use planning inventories from both the new and old plans. Because the scaling is done for each chemical species, the inventories used should also be speciated using the same procedure, by applying speciation profiles for the various emission source categories. Unfortunately, the old speciation profiles for the 2008 $PM_{2.5}$ Plan were not available, so the planning inventory from the 2008 $PM_{2.5}$ Plan could not be speciated in the same way as the 2015 $PM_{2.5}$ Plan planning inventory could. Therefore, CARB used the modeling inventory from the 2008 $PM_{2.5}$ Plan, which did have a speciation procedure comparable to that available for the 2015 $PM_{2.5}$ Plan planning inventory. In sum, in calculating the RRF scaling factors, CARB used the modeling inventory to compute percent emission changes for the 2008 $PM_{2.5}$ Plan and used the planning inventory for emission changes for the 2015 $PM_{2.5}$ Plan.[378] [379]

CARB's modeling domain is somewhat larger than the SJV nonattainment area, so emission totals differ between the modeling inventory and the planning inventory. But we expect that percent changes are comparable because both the modeling inventories and planning inventories reflect emissions from the same types of sources and in similar proportions. The inventories also reflect similar controls, for example statewide motor vehicle emissions controls, where motor vehicles are the main source of NO_X. We also expect the ratios of the percent changes, *i.e.,* the RRF scaling factors themselves, to be comparable given discrepancies between the modeling and planning inventories would typically be similar for the two plans used in the ratio, and hence canceled out to an extent.

The 2015 $PM_{2.5}$ Plan provided several bases to support the use of a scaling approach premised on the 2008 $PM_{2.5}$ Plan model response. The base case in the previous modeling was based on extensive measurements during the 2000 CRPAQS study,[380] and the underlying meteorological conditions leading to high $PM_{2.5}$ concentrations in the 2000–2001 winter were similar to those in the 2013–2014 winter, including persistent pressure ridges, surface inversions, cool temperatures,

Haze,'' EPA–454/B–07–002, April 2007 (''Modeling Guidance''); and ''Update to the 24 Hour $PM_{2.5}$ NAAQS Modeled Attainment Test,'' Memorandum from Tyler Fox, Air Quality Modeling Group, OAQPS, EPA to Regional Air Program Managers, EPA, June 28, 2011 (''Modeling Guidance Update'').

[375] In this section, we use the terms ''base case,'' ''base year'' or ''baseline,'' and ''future year'' as described in section 3.5 of the EPA's Modeling Guidance. The ''base case'' modeling simulates measured concentrations for a given time period, using emissions and meteorology for that same year. The modeling ''base year'' (which can be the same as the base case year) is the emissions starting point for the plan and for projections to the future year, both of which are modeled for the attainment demonstration. *See* Modeling Guidance at pp. 33–34. Note that CARB sometimes uses ''base year'' synonymously with ''base case'' and ''reference year'' instead of ''base year.''

[376] Modeling Guidance Update at 43 *ff.*

[377] 2015 $PM_{2.5}$ Plan, Chapter 4, p. 4–8, and Appendix F, p. F–4.

[378] 2015 $PM_{2.5}$ Plan, Appendix F, p. F–4.

[379] Modeling the ambient $PM_{2.5}$ components of elemental carbon (EC) and organic carbon (OC) and geological material requires emissions for those, derived from speciation profiles of the various emission source categories. The RRF scaling also requires separate EC and OC emissions. But planning inventories, such as that available for the 2008 plan, generally report only direct $PM_{2.5}$ emissions, the total of these species.

[380] 2000 California Regional Particulate Air Quality Study (CRPAQS); descriptive documents available on CARB's ''Central California Air Quality Studies'' Web site at *http://www.arb.ca.gov/airways.*

and low winds.[381] Also, the 2004–2006 $PM_{2.5}$ species composition data that CARB used for speciating $PM_{2.5}$ concentrations in the 2008 $PM_{2.5}$ Plan show a similar composition to 2011–2013 speciation measurements that CARB used in the 2015 $PM_{2.5}$ Plan to speciate design values prior to applying RRFs, as seen in composition pie charts for Bakersfield, Fresno, Modesto, and Visalia.[382]

These observations indicate that the 2013 $PM_{2.5}$ design values for the current 2015 $PM_{2.5}$ Plan would respond in a way similar to the 2008 $PM_{2.5}$ Plan modeling. An alternative would have been to use modeling from the 2012 $PM_{2.5}$ Plan, which had a 2007 meteorology and emissions base case, which is more recent than that in the 2008 $PM_{2.5}$ Plan. However, it modeled only the first and fourth quarters, the only quarters needed to address the 24-hour NAAQS; the 2008 $PM_{2.5}$ Plan modeled the entire year, and so was suitable for assessing both the 24-hour and the annual $PM_{2.5}$ NAAQS.

CARB calculated an RRF from the scaling formula using the concentration of each $PM_{2.5}$ chemical species, with emissions from the corresponding precursor. CARB used percent changes in emissions of NO_X, SO_X, Organic Carbon (OC), Elemental Carbon (EC), and other (direct $PM_{2.5}$ less OC and EC), to scale the RRF for the corresponding ambient $PM_{2.5}$ component: Nitrate (NO_3^-), sulfate (SO_4^{-2}), OC, EC, and geological material (also called ''other'' or ''dust''). For the ammonium component, which is present in ammonium nitrate and ammonium sulfate, a choice must be made as to which precursor emissions, either NO_X or SO_2, should be used in scaling ammonia; CARB used NO_X.

This is in line with information in the Plan indicating that ammonium nitrate formation responds far more to NO_X emission changes than to ammonia changes. The Plan also noted that sulfate is a much smaller ambient component than nitrate, so that ammonium scales more with NO_X than with SO_2.[383] Conceivably some combination of precursor emissions could have been used for scaling ammonium, but that would require a plausibility argument about how to reflect the actual chemistry involved, a complication that would obscure both the relative simplicity of direct scaling and the more comprehensive consideration of chemistry already present in the modeling being scaled. Another point about the choice of NO_X is that ammonium concentrations were independent of ammonia emissions, since the latter was not used, and so inherently cannot respond to increases or decreases of ammonia that occur during the planning period.

As discussed in section V.C of this notice, modeling for the 2012 $PM_{2.5}$ Plan showed that there is a small ambient response to ammonia changes. Additionally, annual average ammonia emissions in the planning inventory increase by 8.6% from 2012 to 2020, which suggests that the ammonium contribution to projected design values may be higher than stated in the Plan. However, this is of little concern since the pre-scaled RRFs for ammonium, nitrate, and sulfate were based on actual modeling for the 2008 $PM_{2.5}$ Plan; they take into account the atmospheric chemistry and the ambient effects due to ammonia changes during 2005–2014, when the annual average ammonia emissions increased by 18.1%.

Aside from the RRFs themselves, the procedure that CARB followed in the 2015 $PM_{2.5}$ Plan for projecting design values is consistent with the recommendations in the Modeling Guidance. The steps included using daily speciation data and the SANDWICH approach[384] to split daily measured $PM_{2.5}$ concentrations into their chemical components, taking quarterly averages (of all days for the annual standard, and of the highest 10% or so of days for the 24-hour standard), applying RRFs to get future component concentrations, summing to total $PM_{2.5}$, and finally averaging over quarters and years to estimate the future design value.

Two aspects of the Plan's approach to modeling differ from the Modeling Guidance recommendations. First, for the 24-hour $PM_{2.5}$ NAAQS, the RRFs were applied to a single high value per quarter to represent the potential 98th percentile, as opposed to applying RRFs to multiple high individual days in each quarter, and then choosing the 98th percentile. The former approach is consistent with the original Modeling Guidance, before it was updated to the latter approach by the June 28, 2011 Modeling Guidance Update.[385] The latter approach is intended to allow for the shifting of high days between quarters as emission controls are applied: a day that has a concentration in the top 10% in the autumn may more strongly respond to controls and no longer be in the top 10%, while a summer day may respond less to controls and end up being in the post-control top 10%. Because winter $PM_{2.5}$ concentrations are significantly higher than those in the other seasons, such shifting is very unlikely to be an issue in the SJV.

Second, the Modeling Guidance recommends that RRFs be applied to the average of three three-year design values[386] (*e.g.* using data in 2010–2012, 2011–2013, and 2012–2014), whereas the Plan used just the single 2013 design value (2011–2013 data). The 2011–2013 period for the 2013 design value is centered on the Plan's 2012 base year, as the Modeling Guidance recommends. One reason for the longer period in EPA's recommendation is that the additional averaging provides some stability in the estimate.

Although the Plan's procedure is not entirely consistent with EPA guidance, we find it acceptable in this context given the time constraints imposed by EPA's April 2015 reclassification of the SJV area[387] and the available modeling analyses. Despite the presence of scaling at a key step, CARB's approach remains a modeled attainment demonstration as required by section 189(b)(1)(A) of the Act. It relies on photochemical modeling that EPA reviewed and approved[388] for the 2008 $PM_{2.5}$ Plan, and which remains sufficiently representative of $PM_{2.5}$ formation in the SJV.

Three other considerations give some reassurance of the acceptability of a scaling approach. First, EPA's 2014 draft modeling guidance explicitly recognizes that ''there may be plausible alternative means of calculating the relative response factors [RRFs] that can differ from the approaches recommended.''[389] While this 2014 draft guidance does not

[381] 2015 $PM_{2.5}$ Plan, Appendix F, p. F–4, and WOEA, p. A–5.

[382] 2015 $PM_{2.5}$ Plan, Appendix F, Attachment A, p. F–8 to F–10.

[383] 2015 $PM_{2.5}$ Plan, Appendix F, p. F–5.

[384] *S*ulfate, *A*djusted *N*itrate, *D*erived *W*ater, *I*nferred *C*arbonaceous mass material balance approac*h:* Modeling Guidance, p. 47; Frank, N., 2006: ''Retained Nitrate, Hydrated Sulfates, and Carbonaceous Mass in Federal Reference Method Fine Particulate Matter for Six Eastern U.S. Cities,'' J. Air Waste Management Assoc., 56, 500–511.

[385] Modeling Guidance, p. 58 and Modeling Guidance Update, p. B–2 (Steps 1, 4, and 5).

[386] Modeling Guidance, p. 22; and Modeling Guidance Update, p. B–1.

[387] 80 FR 18528 at 18530 (April 7, 2015) (noting unusually short timeframe for State's development and submission of a plan to provide for attainment of the 1997 $PM_{2.5}$ NAAQS by the Serious area attainment date, which is December 31, 2015).

[388] ''Technical Support Document for the Proposed Action on the San Joaquin Valley 2008 $PM_{2.5}$ Plan and the San Joaquin Valley Portions of the Revised 2007 State Strategy,'' EPA Region 9, November 8, 2010, for proposed approval in 75 FR 74518 (November 30, 2010); final approval was in 76 FR 69896 (November 9, 2011).

[389] ''Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone, $PM_{2.5}$, and Regional Haze'', DRAFT December 2014, EPA OAQPS, p. 99.

specifically address the alternative of scaled RRFs, it indicates, as does the Modeling Guidance, that alternatives to the recommended procedures are acceptable where adequately supported. Second, even the recommended RRF procedure involves model sensitivity derived from one period being applied to another: RRFs are computed using a single year's modeled response to emissions changes, but are assumed to be applicable to all five years composing the average over three design values. This consideration makes the 2015 $PM_{2.5}$ Plan's application of the model response from one period to another analogous to the application more broadly envisioned by the Modeling Guidance.

Finally, while scaling itself is relatively crude, the scaling of RRFs is less so. The procedure is not a simple scaling of an emission total, but reflects the geographic and temporal distribution of the emissions sources and the emission changes, since it is based on modeling. The pattern of emission changes during the span of the 2015 $PM_{2.5}$ Plan does not exactly match the changes modeled for the span of the 2008 $PM_{2.5}$ Plan, but many of the emission reductions continue the effect of existing controls on the same types of sources, so the patterns of the emissions changes are unlikely to be very different. For example, continued vehicle NO_X emission reductions occur over much the same roadway network and direct $PM_{2.5}$ reductions from controls on wood burning are largely achieved from the same residential areas.

Late in EPA's review process, EPA and CARB found that the scaling factor for EC had been applied to the RRF for OC and the product used as the RRF for EC, and vice versa.[390] Because the original RRFs for OC were larger than those for EC, and remained so after scaling, applying the smaller EC scaled RRFs to OC made the projected OC concentration smaller than it should have been. Conversely, projected EC was larger than it should have been. Because OC has a larger ambient contribution than EC, the OC effect dominates. The net result of the EC–OC reversal is that the projected design values for the attainment demonstration were underestimated. CARB estimates that the 2020 annual design value for Madera increased from the 2015 $PM_{2.5}$ Plan's original 15.0 μg/m^3 to a corrected value of 16.2 μg/m^3,[391] which is above the 1997 annual $PM_{2.5}$ NAAQS.

However, CARB presents compelling reasons for discounting this high Madera projected 2020 annual design value. The starting point for the scaled modeling projection is the 2013 design value—the average of annual means during 2011–2013. The 2011 monitoring data included within that 2013 design value appears anomalous, as documented in the WOEA at Appendix A2 (''Assessment of the Representativeness of 2011 $PM_{2.5}$ Beta Attenuation Monitor Data from Madera'') and Attachment B to CARB's Technical Clarifications of August 12, 2015 (''Attachment B''). We refer herein to figures and tables in Appendix A2 of the WOEA as ''S.R. App. A2, Figure 2.''

EPA's regulations require that monitoring data for comparison to the NAAQS be collected using specific equipment and procedures to ensure accuracy and reliability.[392] For each NAAQS, the default monitoring equipment and the procedures for operating it are termed the Federal Reference Method (FRM); an alternative approach, termed a Federal Equivalent Method (FEM) may also be used if it is demonstrated to give results comparable to an FRM monitor. The Met One Beta Attenuation Monitor (BAM) 1020 is an example of an FEM that provides continuous hourly $PM_{2.5}$ concentrations compared to the FRM's 24-hour average $PM_{2.5}$ concentrations. This is useful for a number of purposes, including real-time forecasting for deciding when to issue public advisories and wood burning restrictions, as well as for evaluating air quality model performance. BAMs are deployed at multiple sites in the SJV, including Madera (the ''Madera-City'' site, AQS ID 06–039–2010).[393]

As described in the S.R. App. A2, 2011 was the first full year of data collected by the Madera BAM, and the concentrations were unexpectedly high in comparison with other monitoring sites, including both BAMs and FRM monitor sites. During 2011–2013, annual concentrations at Madera were some 30% higher than at Fresno, and as much as 100% higher during the summer, historically the season with the lowest $PM_{2.5}$.[394] This was unexpected because historically there has been a north-to-south increasing gradient of concentrations, with northern sites like Stockton and Merced at the low end, and southern sites like those in Bakersfield at the high end, and with central sites like Fresno somewhere in between.[395] This gradient is consistent with the greater potential for ventilation at the northern end of the SJV, nearest the opening to the ocean at the Golden Gate, and the lower ventilation at the southern end, surrounded by mountains. Madera and Fresno concentrations are highly correlated,[396] suggesting common meteorological influences at the two sites, as opposed to additional emission sources contributing at Madera.

Various checks on the monitor and its operation were made over time without affecting the high readings, but in April 2014, adjustments were made as a result of checking the zero point of the instrument using outdoor air, rather than indoor air (both are permissible; outdoor air could be more representative of the conditions the instrument normally operates under).[397] After that time, Madera concentrations shifted to lower values,[398] conformed better to the known north-south gradient,[399] and tracked closely with the monitored data from the Merced-Coffee Road site about 30 miles to the North, which is expected given the two monitors' proximity to one another and similar geographic conditions.[400] They also agreed better with measurements at a new FRM installed in July 2014 at the Madera site.[401] ARB concluded that the 2011 ''BAM data at Madera appear to be biased high due to sampling artifacts . . . not representative of air quality in the central portion of the Valley''.[402]

The 2015 $PM_{2.5}$ Plan nevertheless included the 2011 Madera data and 2013 design value in the attainment demonstration, because up until recently the issue appeared to be moot, as despite the high starting point concentration the modeling predicted a 2020 annual concentration of 15.0 μg/m^3, which attains the 1997 annual $PM_{2.5}$ NAAQS. The discovery of the EC–OC reversal described above brings the issue to the fore because there is no

[390] Letter from K. Magliano, CARB to K. Drake, EPA Region 9, August 12, 2015. *See also,* Memo to file, ''Call with California Air Resources Board regarding letter about reversal of elemental and organic carbon,'' S. Bohning, EPA Region 9, September 18, 2015.

[391] *Id.,* Attachment A (''Revised San Joaquin Valley $PM_{2.5}$ Design Values'').

[392] 40 CFR parts 53 and 58.

[393] 2015 $PM_{2.5}$ Plan, Chapter 4, Table 4–3 (''Projected 2020 Annual and 2018 24-hour Design Values''), p.4–9.

[394] S.R. App. A2, Figures 3 and 4, and Tables 1 and 2.

[395] S.R. App. A2, Figure 2.

[396] S.R. App. A2, Figure 3.

[397] ''BAM 1020 Particulate Monitor Operation Manual, BAM–1020–9800 Rev K'', Met One Instruments, Inc. 2008; Memorandum from Tim Hanley, Office of Air Quality Planning and Standards, EPA to Met One BAM Users, ''RE: Zero Tests on the Met One BAM 1020,'' October 5, 2012.

[398] S.R. App. A2, Figure 8.

[399] S.R. App. A2, Figure 9.

[400] Letter from K. Magliano, CARB to A. Steckel, EPA Region 9, August 12, 2015, Attachment B, p. 2.

[401] S.R. App. A2, Figures 12 and 13.

[402] S.R. App. A2, p.A2–9.

room for the increase it causes in the 2020 Madera design value.

The fact that 2011–2013 Madera BAM concentrations are higher than values at the Fresno FRM and other sites does not in itself prove they are incorrect; it is conceivable that unknown sources were contributing there. Also, the later agreement between the lower Madera BAM and FRM concentrations could be explained as sources that are now emitting less, or that are contributing less at the monitor due to different wind patterns. Nevertheless, the mismatch with the historical gradient pattern, the unexpectedly but only temporarily high readings that declined after an adjustment in operation, and the current lower FRM readings do suggest that the 2011 Madera concentrations were anomalous. EPA believes that the 2011–2013 readings at the Madera site are not known to be representative of air quality for Madera and not sufficiently certain to drive the SJV control strategy, or to invalidate the conclusion of the attainment demonstration that the SJV will attain the 1997 annual NAAQS in 2020.

CARB explored two alternative scenarios to estimate annual average, ambient $PM_{2.5}$ values in 2020 for the Madera site.[403] Under the first scenario, CARB substituted the 2014 design value of 15.8 μg/m^3 at the Madera site for its 2013 design value and estimated that the 2020 Madera design value would be 14.1 μg/m^3. For the second scenario, CARB substituted the annual 2011 data from the Merced-Coffee Road site, adjusted upward to reflect the typically slightly higher values at Madera, resulting in an estimated 2020 Madera design value of 14.9 μg/m^3. Both scenarios are reasonable alternatives to estimating the 2020 Madera design value for the SJV attainment planning purposes for the 1997 annual $PM_{2.5}$ NAAQS. Accordingly, the Bakersfield-Planz site, which would have a corrected 2020 design value of 15.0 μg/m^3, would become the design value monitor for the SJV, as would be expected under the historic observation of a north-to-south increasing gradient of concentrations.[404]

EPA accepts the scaled modeling approach of the attainment demonstration in the 2015 $PM_{2.5}$ Plan, which was the product of extended discussion between EPA, ARB, and SJVUAPCD. Based on our review of the modeling approach and results, we propose to conclude that the 2015 $PM_{2.5}$ Plan adequately demonstrates that the SJV area will attain the 1997 annual $PM_{2.5}$ NAAQS by December 31, 2020 and attain the 1997 24-hour $PM_{2.5}$ NAAQS by December 31, 2018. We recommend that CARB reassess the status of the modeled attainment of the 1997 24-hour and annual $PM_{2.5}$ NAAQS as part of the new modeling required for SIP revisions addressing the 2006 and 2012 $PM_{2.5}$ NAAQS.

Evaluation of Bakersfield-Planz Data Exclusion for May 5, 2013

As described in the 2015 $PM_{2.5}$ Plan, the State and District based the attainment demonstration on ambient measurements during 2011–2013.[405] The 24-hour $PM_{2.5}$ concentration of 167.3 μg/m^3 measured at the Bakersfield-Planz monitoring site (AQS ID: 06–029–0016) on May 5, 2013 was not included in the attainment demonstration analyses due to its unrepresentativeness for purposes of attainment planning for the SJV as a whole. Therefore, the modeled projections for the 2020 annual $PM_{2.5}$ design values and 2018 24-hour design values[406] and the discussion of the modeling results in Appendix F, section F.4 of the Plan are based on data that exclude the May 5, 2013 24-hour data point from the Bakersfield-Planz monitoring site.

The Plan provides an assessment of the representativeness of this data for purposes of inclusion in the attainment demonstration analyses[407] and concludes that:

''In summary, comparison of the 167.3 μg/m^3 concentration measured on May 5, 2013, to values typical for this season as well as comparison to values measured throughout the Valley on the same day, combined with the record high fugitive dust and elemental species concentrations, indicate that the monitor was impacted by microscale sources that are not representative of the neighborhood spatial scale the monitor is intended to represent. Therefore, this value is not included in modeling analysis for the San Joaquin Valley 2015 $PM_{2.5}$ Plan.''

The assessment provided in the Plan[408] based this conclusion on: (1) Representativeness of Bakersfield-Planz $PM_{2.5}$ data;[409] (2) potential fugitive dust sources affecting the Bakersfield-Planz site;[410] and (3) meteorology at the Bakersfield-Planz site.[411]

Information provided regarding the representativeness of Bakersfield-Planz data included analyses of San Joaquin Valley seasonal $PM_{2.5}$ concentrations[412] and elemental species composition.[413] The assessment provided $PM_{2.5}$ data on the highest concentrations throughout the Valley since 2000 and shows that the May 5, 2013 Bakersfield-Planz value was unusually high compared to historical trends since 2000. Further, this data point was also unusually high compared to other sites in the San Joaquin Valley on the same day.[414] The species composition analyses show that the primary content of the particulate matter was fugitive dust and that the level of the dust was over four times higher than the next highest value observed in the entire California network based on 14 years of available data. In addition, total elemental species and other chemical species were found to be unusually high.

The State and District's assessment of potential fugitive dust sources affecting the Bakersfield-Planz site was based on an evaluation of aerial photos to identify sources and field investigation by District enforcement staff.[415] The assessment found no documented dust violations at any nearby sources and identify the likely source of the dust was from the open areas immediately adjacent to the monitor, suggesting a localized microscale impact.

The third part of the assessment evaluated meteorology at the Bakersfield-Planz Monitoring Site.[416] Wind speeds on May 5, 2013 were compared to other days in May 2013 and also to other high wind days at the Bakersfield-Planz site. The wind speeds were in excess of 25 mph for over eight hours on May 5, 2013. The meteorology indicates that Bakersfield-Planz experienced a high wind event on May

[403] Letter from K. Magliano, CARB to A. Steckel, EPA Region 9, August 12, 2015, Attachment B, pp. 3–4.

[404] Note that if the unexpectedly high concentrations seen in 2011–2013 are due to real phenomena affecting air quality, then they would be expected to occur again at some point in the intervening years between now and the projected attainment year of 2020. If they do occur again, then they would influence the monitored attainment status at that time, and hence any request for SJV to be designated attainment.

[405] 2015 $PM_{2.5}$ Plan, Appendix F, p F–4.

[406] 2015 $PM_{2.5}$ Plan, Appendix F, Table F–1.

[407] 2015 $PM_{2.5}$ Plan, Appendix F, Attachment B: Assessment of the Representativeness of the $PM_{2.5}$ Value Recorded at the Bakersfield-Planz Monitoring Site on May 5, 2013.

[408] 2015 $PM_{2.5}$ Plan, Appendix F, Attachment B.

[409] 2015 $PM_{2.5}$ Plan, Appendix F, Attachment B, Section B.

[410] 2015 $PM_{2.5}$ Plan, Appendix F, Attachment B, Section C.

[411] 2015 $PM_{2.5}$ Plan, Appendix F, Attachment B, Section D.

[412] 2015 $PM_{2.5}$ Plan, Appendix F, pp. F–11 to F–13.

[413] *Id.,* pp. F–13 to F–14.

[414] *Id.,* pp. F–12 to F–13.

[415] *Id.,* pp. F–14 to F–16.

[416] *Id.,* pp. F–17 to F–18.

5, 2013 that was unusual in terms of wind speed and duration.

Overall, EPA agrees with the evidence provided that the Bakersfield-Planz monitor was affected by an unusual high wind dust event on May 5, 2013 that resulted in anomalous $PM_{2.5}$ concentrations on that day. EPA believes that it is appropriate to omit this data point from the attainment demonstration based on EPA's 2013 guidance on exceptional events.[417] Regarding the inclusion of event-affected data for attainment demonstrations, EPA's 2013 guidance says:

''An air agency incorporating the event-related concentration in a design value used for a prospective attainment demonstration might seem to need more emission reductions to attain the NAAQS by its attainment deadline than is actually the case. The EPA plans to more formally address this topic on a pollutant/NAAQS basis, the first of which will be ozone guidance in the preamble of a soon-to-be-proposed rulemaking on SIP requirements for areas designated nonattainment for the 2008 ozone NAAQS. Until the planned guidance for a pollutant and NAAQS of interest is issued, air agencies should consult with their EPA regional office if they face this situation.'' [418]

EPA reviewed $PM_{2.5}$ data in AQS for the SJV since 2010 and identified four days flagged with high wind exceptional event requests for exclusion. These $PM_{2.5}$ high wind dust events do not appear to be recurring events and their inclusion in the attainment demonstration therefore would not accurately reflect the effect of controls during more typical conditions at the Bakersfield-Planz monitoring site.[419] Based on these reviews, EPA agrees with the State's and District's assertion that the May 5, 2013 concentrations at Bakersfield-Planz were due to an unusual $PM_{2.5}$ high wind dust event that would not be appropriate to include in the attainment demonstration.

In addition to EPA's 2013 guidance on exceptional events, EPA also considered the monitoring requirements for $PM_{2.5}$. In particular, 40 CFR part 58, Appendix D, section 4.71(b) specifies for $PM_{2.5}$:

''The required monitoring stations or sites must be sited to represent area-wide air quality. These sites can include sites collocated at PAMS. These monitoring stations will typically be at neighborhood or urban-scale; however, micro-or middle-scale $PM_{2.5}$ monitoring sites that represent many such locations throughout a metropolitan area are considered to represent area-wide air quality.''

Based on the information provided in the Plan, EPA agrees that the Bakersfield-Planz concentrations on May 5, 2013 appear to have been affected by a localized event; therefore, it was neither representative of neighborhood scale concentrations, nor occurring at many locations. EPA agrees with the State and District that the May 5, 2013 concentrations at Bakersfield-Planz were not representative of area-wide, typical $PM_{2.5}$ concentrations in San Joaquin Valley.

Based on the technical analyses provided in the Plan and EPA guidance and requirements as cited in this section, EPA agrees with the State and District that the May 5, 2013 Bakersfield-Planz 24-hour $PM_{2.5}$ data point resulted from a localized, anomalous event that can be omitted from the attainment demonstration analyses.

Evaluation of Control Strategy

The attainment control strategy in the 2015 $PM_{2.5}$ Plan consists of State and District baseline measures that continue to achieve emission reductions and four additional control measures that the District either recently revised or, in one case, has committed to revise in 2016. With respect to baseline measures for stationary and area sources, the District identified the source categories under its jurisdiction and their projected emission levels in Appendix B, section B.2.2 (''Emissions Inventory Documentation'') and described each of the District measures that apply to these source categories in section B.2.2.3 of the Plan (''Control Profiles'').[420] All but one of the 55 District control measures listed in section B.2.2.3 of the Plan have been approved into the California SIP.[421]

With respect to mobile sources, the State identified the source categories and described the EMFAC2014 emission factor model used to project their future emission levels in Appendix B, sections B.2.2.4 through B.2.2.7 of the Plan.[422] As explained in section V.D of this proposed rule, in a separate rulemaking, EPA is proposing to approve CARB's submitted waiver measures into the SIP and intends to finalize that rulemaking before taking final action on the 2015 $PM_{2.5}$ Plan.

Table 8 below summarizes the emission reductions needed in the SJV to attain the 1997 24-hour and annual $PM_{2.5}$ NAAQS by the end of 2018 and 2020, respectively.

TABLE 8—SUMMARY OF DIRECT $PM_{2.5}$ AND NO_X EMISSION REDUCTIONS NEEDED FOR THE 2015 $PM_{2.5}$ PLAN ATTAINMENT DEMONSTRATION

	24-hour Standard Attainment by 2018 (tpd annual average)		Annual Standard Attainment by 2020 (tpd winter average)	
	$PM_{2.5}$	NO_X	$PM_{2.5}$	NO_X
A 2012 emissions inventory [a]	61.0	318.5	66.0	332.2
B Emissions inventory after baseline measures	57.7	213.9	62.8	206.9
C Emissions inventory needed to attain	54.4	213.7	60.8	206.5
D Total emission reductions needed by attainment year (A—C)	6.6	104.8	5.2	125.7

Source: 2015 $PM_{2.5}$ Plan, CARB Staff Report, Tables 1 and 2, p. 9, except as otherwise noted.
[a] 2015 $PM_{2.5}$ Plan, Appendix B, Tables B–1 and B–2.

[417] Memorandum from Steven D. Page, Director Office of Air Quality Planning and Standards, to Regional Air Directors, I–X, ''Interim Guidance to Implement Requirements for the Treatment of Air Quality Monitoring Data Influenced by Exceptional Events,'' May 10, 2013 (''2013 Exceptional Events Guidance'').

[418] *Id.*

[419] EPA also reviewed PM_{10} data in AQS for the SJV since 2010 and identified eight days flagged with high wind exceptional event request for exclusion, which indicate that PM_{10} high wind dust events recur and should be subject to reasonable controls in accordance with the 2013 Exceptional Events Guidance.

[420] 2015 $PM_{2.5}$ Plan, Appendix B, pp. B–23 to B–31. *See also,* within this section, Table B–8 (''District Rules Included in the SIP Inventory'').

[421] *See* EPA Region 9's Web site for information on District control measures that have been approved into the California SIP, available at: *http://yosemite.epa.gov/r9/r9sips.nsf/Agency?ReadForm&count=500&state=California&cat=San+Joaquin+Valley+Unified+APCD-Agency-Wide+Provisions.* Of the District measures identified in Appendix B of the Plan, only Rule 4691 (''Vegetable Oil Processing Operations''), which limits VOC emissions from vegetable oil processing operations, is not currently approved into the California SIP. EPA approved a previous version of this rule (Rule 461.2) into the SIP on January 18, 1994 (59 FR 2535).

[422] 2015 $PM_{2.5}$ Plan, Appendix B, pp. B–31 to B–35.

The Plan identifies four District measures that will achieve additional emission reductions beyond baseline measures and contribute to expeditious attainment of the 1997 $PM_{2.5}$ NAAQS.[423] First, Rule 4308 (''Boilers, Steam Generators, and Process Heaters 0.075 to <2 MMBtu/hr''), as amended November 14, 2013, limits NO_X emissions from boilers, steam generators, and process heaters sized between 0.075 and 2 MMBtu/hr and is projected to achieve 0.0007 tpd of NO_X emission reductions by 2018 and 0.0011 tpd of NO_X emission reductions by 2020.[424] EPA approved this rule into the California SIP on February 12, 2015.[425]

Second, the District has committed to amend Rule 4692 (''Commercial Charbroiling'') in 2016 to add requirements for under-fired charbroilers, with an anticipated compliance date in 2017.[426] Rule 4692, as approved into the SIP on November 3, 2011, regulates emissions from chain-driven charbroilers but does not regulate under-fired charbroilers.[427] The District projects that its anticipated revisions to Rule 4692 to regulate under-fired charbroilers will achieve an additional 0.4 tpd of direct $PM_{2.5}$ emission reductions in 2018 and 2020.[428] EPA recently proposed to approve this commitment into the California SIP.[429]

Emission reductions of 0.4 tpd of direct $PM_{2.5}$ represent 6.1% of the total $PM_{2.5}$ emission reductions needed to attain the 1997 24-hour standard by 2018 and 7.7% of the total $PM_{2.5}$ emission reductions needed to attain the 1997 annual standard by 2020.[430] These are limited portions of the total $PM_{2.5}$ emission reductions needed for expeditious attainment of the 1997 $PM_{2.5}$ standards in the SJV. Based on the District's history of timely meeting similar rule commitments (*see* section V.E.3 of this preamble), we find that the District is capable of fulfilling this commitment. We also find that the commitment to adopt the amended rule by 2016 is for a reasonable and appropriate timeframe given the need for $PM_{2.5}$ emission reductions to attain by 2018 and 2020. Accordingly, we propose to approve this rule commitment as part of the control strategy in the 2015 $PM_{2.5}$ Plan. For a more detailed discussion of this commitment and the District's evaluations to date, *see* the EPA's SJV Rules TSD.

Third, the District projects that Rule 4901 (''Wood Burning Fireplaces and Wood Burning Heaters''), as amended September 18, 2014, will achieve 2.9 tpd of direct $PM_{2.5}$ emission reductions by 2018 and 1.6 tpd of direct $PM_{2.5}$ emission reductions by 2020. Specifically, the District's 2014 rule amendment to lower the rule's ''no burn threshold'' from 30 $\mu g/m^3$ to 20 $\mu g/m^3$ (24-hour average ambient $PM_{2.5}$ concentration) for non-EPA certified, non-District registered wood burning devices is projected to achieve a winter 24-hour average of 2.2 tpd of direct $PM_{2.5}$ emission reductions by 2018 and an annual average of 1.1 tpd of direct $PM_{2.5}$ emission reductions by 2020.[431] The 2015 $PM_{2.5}$ Plan relies on Rule 4901 for an additional 0.7 tpd of direct $PM_{2.5}$ emission reductions (winter 24-hour average) by 2018 and an additional 0.5 tpd of direct $PM_{2.5}$ emission reductions (annual average) by 2020 resulting from homeowners replacing high-emitting fireplaces and stoves with low-emitting, EPA-certified devices.[432] The EPA recently proposed to approve Rule 4901 into the California SIP.[433]

Finally, the District projects that Rule 4905 (''Natural Gas-Fired, Fan-Type Residential Central Furnaces''), as amended January 22, 2015, will achieve 0.2 tpd of NO_X emission reductions by 2018 and 0.4 tpd of NO_X emission reductions by 2020.[434] This rule includes a mitigation fee option that allows manufacturers to sell non-compliant furnaces for 36-month transition periods ranging from 2015 to 2021, depending on unit type.[435] Based on information in the District's staff report on Rule 4905, the District estimates emission reductions of 0.105 tpd of NO_X per year from three of the four types of units, which have compliance dates ranging from April 1, 2015 through October 1, 2016.[436]

The EPA recently proposed to approve Rule 4905 into the California SIP.[437] Because the sale of non-compliant units is allowed to varying degrees in 2018 by manufacturers paying mitigation fees, we propose to credit Rule 4905 with 0.035 tpd of NO_X emission reductions in 2018 rather than the 0.105 tpd of emission reductions identified in the District's staff report for the rule. The amount we propose to not credit (*i.e.,* 0.16 tpd of NO_X) represents only 0.2% of the total winter average NO_X reduction from 2012 to 2018.[438] Using the 24-hour $PM_{2.5}$ sensitivity of 0.08 $\mu g/m^3$ per ton of NO_X emission reduction at the projected 2018 design value site of Bakersfield-California St., as modeled for the 2012 $PM_{2.5}$ Plan,[439] this would result in an ambient 24-hour $PM_{2.5}$ concentration increase of about 0.013 $\mu g/m^3$.[440] This represents a minimal effect on ambient $PM_{2.5}$ levels and, therefore, does not undermine the Plan's demonstration of attainment of the 1997 24-hour $PM_{2.5}$ standard by December 31, 2018.

In sum, the attainment demonstration in the 2015 $PM_{2.5}$ Plan relies on numerous State and District baseline regulations and four additional District measures that EPA has either approved or proposed to approve into the California SIP, all of which collectively are projected to achieve emission reductions sufficient for the SJV area to attain the 1997 24-hour $PM_{2.5}$ standard by 2018 and the 1997 annual $PM_{2.5}$ standard by 2020. Table 9 provides a summary of the emission reductions from the four additional District measures that we propose to credit toward the Plan's attainment control strategy.

[423] 2015 $PM_{2.5}$ Plan, CARB Staff Report, Tables 1 and 2, p. 9.

[424] 2015 $PM_{2.5}$ Plan, Chapter 7, p. 7–3 and CARB Staff Report at p. 9.

[425] 80 FR 7803 (February 12, 2015).

[426] 2015 $PM_{2.5}$ Plan, Chapter 7, section 7.1.2, p. 7–6 and SJVUAPCD Governing Board Resolution 15–4–7A (April 16, 2015) at paragraph 7.

[427] 76 FR 68103 (November 3, 2011).

[428] 2015 $PM_{2.5}$ Plan, Chapter 7 at p. 7–6.

[429] 80 FR 1816 at 1833 and 1844 (January 13, 2015).

[430] 2015 p.m.2.5 Plan, CARB Staff Report, Tables 1 and 2, p. 9, and Appendix B (''Emissions Inventory''), Tables B–1 and B–2.

[431] The District calculated these estimates using its estimates of direct $PM_{2.5}$ emission reductions for the 120-day wood burning season covered by the rule and ratios of 120/365 days and 120/180 days for the annual average and winter (24-hour) average emission reductions, respectively. *See* SJVUAPCD, ''Final Staff Report for Amendments to the District's Residential Wood Burning Program,'' Appendix B, (''Emission Reduction Analysis Amendments to Residential Wood Burning Program'') at B–12, September 18, 2014.

[432] The 0.7 tpd and 0.5 tpd emission reduction estimates assume that 14% of devices subject to Rule 4901 will be replaced by 2018 and that 20% of such devices will be replaced by 2020, respectively. For a more detailed discussion of these emission reduction estimates, *see* the EPA's SJV Rules TSD.

[433] 80 FR 58637 (September 30, 2015).

[434] 2015 p.m.2.5 Plan, CARB Staff Report, Tables 1 and 2, p. 9.

[435] SJVUAPCD, ''Final Staff Report Amendments to Rule 4905 (Natural Gas-Fired, Fan-Type Central Furnaces,'' January 22, 2015, p. 9. *See also* EPA's proposed rule on Rule 4905. 80 FR 68484 (November 5, 2015).

[436] SJVUAPCD Rule 4905 as amended January 22, 2015, Table 1 (''NO_X Emission Limits and Compliance Schedule''). *See also,* SJVUAPCD, ''Final Staff Report Amendments to Rule 4905 (Natural Gas-Fired, Fan-Type Central Furnaces,'' January 22, 2015, Appendix B, pp. B–9.

[437] 80 FR 68484 (November 5, 2015).

[438] Percent of total winter average NO_X emission reductions = 0.16 tpd/104.8 tpd = 0.2%.

[439] 2015 $PM_{2.5}$ Plan, WOEA, Table B–2 (''Modeled $PM_{2.5}$ air quality benefit per ton of valley-wide precursor emission reductions''), p. A–27.

[440] Increase in ambient 24-hour $PM_{2.5}$ concentration = (0.08 $\mu g/m^3$/ton of NO_X emission reduction) * (0.16 tpd) = 0.013 $\mu g/m^3$.

TABLE 9—SUMMARY OF EPA PROPOSED EMISSION REDUCTION CREDITS FOR ADDITIONAL DISTRICT CONTROL MEASURES NEEDED FOR THE 2015 $PM_{2.5}$ PLAN ATTAINMENT DEMONSTRATION

District control measure	Annual Standard Attainment by 2020 (tpd annual average)		24-hour Standard Attainment by 2018 (tpd winter average)	
	$PM_{2.5}$	NO_X	$PM_{2.5}$	NO_X
Rule 4308	0.0	0.0011	0.0	0.0007
Rule 4692	0.4	0.0	0.4	0.0
Rule 4901	1.6	0.0	2.9	0.0
Rule 4905	0.0	0.4	0.0	0.035

Source: 2015 $PM_{2.5}$ Plan, CARB Staff Report, Tables 1 and 2, p. 9.

Conclusion

As discussed above, the 2015 $PM_{2.5}$ Plan's air quality modeling demonstrates that the SJV will attain the 1997 24-hour $PM_{2.5}$ standard of 65 μg/m^3 by December 31, 2018 and the 1997 annual $PM_{2.5}$ standard of 15.0 μg/m^3 by December 31, 2020. This demonstration is based on expeditious implementation of the State's and District's BACM and MSM control strategy for stationary, area, and mobile sources in the 2015 $PM_{2.5}$ Plan, together with the District's commitment to achieve additional $PM_{2.5}$ emission reductions from under-fired charbroilers through amendments to Rule 4692. Based on these evaluations, we propose to determine that the 2015 $PM_{2.5}$ Plan provides for attainment of the 1997 24-hour and annual $PM_{2.5}$ standards by the most expeditious alternatives dates practicable, consistent with the requirements of CAA sections 189(b)(1)(A).

F. Reasonable Further Progress and Quantitative Milestones

1. Requirements for Reasonable Further Progress and Quantitative Milestones

CAA section 172(c)(2) requires nonattainment area plans to provide for reasonable further progress (RFP). In addition, CAA section 189(c) requires $PM_{2.5}$ nonattainment area SIPs to include quantitative milestones to be achieved every three years until the area is redesignated to attainment and which demonstrate reasonable further progress (RFP), as defined in CAA section 171(1). Section 171(1) defines RFP as ''such annual incremental reductions in emissions of the relevant air pollutant as are required by [Part D] or may reasonably be required by the Administrator for the purpose of ensuring attainment of the applicable [NAAQS] by the applicable date.'' Neither subpart 1 nor subpart 4 of part D, title I of the Act requires that a set percentage of emissions reductions be achieved in any given year for purposes of satisfying the RFP requirement.

RFP has historically been met by showing annual incremental emission reductions sufficient generally to maintain at least linear progress toward attainment by the applicable deadline.[441] As discussed in EPA guidance in the Addendum, requiring linear progress in reductions of direct $PM_{2.5}$ and any individual precursor in a $PM_{2.5}$ plan may be appropriate in situations where:

- the pollutant is emitted by a large number and range of sources,
- the relationship between any individual source or source category and overall air quality is not well known,
- a chemical transformation is involved (*e.g.,* secondary particulate significantly contributes to $PM_{2.5}$ levels over the standard), and/or
- the emission reductions necessary to attain the $PM_{2.5}$ standard are inventory-wide.[442]

The Addendum states that requiring linear progress may be less appropriate in other situations, such as:

- where there are a limited number of sources of direct $PM_{2.5}$ or a precursor,
- where the relationships between individual sources and air quality are relatively well defined, and/or
- where the emission control systems utilized (*e.g.,* at major point sources) will result in swift and dramatic emission reductions.

In nonattainment areas characterized by any of these latter conditions, RFP may be better represented as step-wise progress as controls are implemented and achieve significant reductions soon thereafter. For example, if an area's nonattainment problem can be attributed to a few major sources, EPA guidance indicates that ''RFP should be met by 'adherence to an ambitious compliance schedule' which is likely to periodically yield significant emission reductions of direct $PM_{2.5}$ or a $PM_{2.5}$ precursor.'' [443]

Plans for $PM_{2.5}$ nonattainment areas should include detailed schedules for compliance with emission regulations in the area and provide corresponding annual emission reductions to be realized from each milestone in the schedule.[444] In reviewing an attainment plan under subpart 4, EPA evaluates whether the annual incremental emission reductions to be achieved are reasonable in light of the statutory objective of timely attainment. Although early implementation of the most cost-effective control measures is often appropriate, states should consider both cost-effectiveness and pollution reduction effectiveness when developing implementation schedules for their control measures and may implement measures that are more effective at reducing $PM_{2.5}$ earlier to provide greater public health benefits.[445]

Section 189(c) requires that attainment plans include quantitative milestones in order to demonstrate RFP. The purpose of the quantitative milestones is to allow periodic evaluation of the area's progress towards attainment of the NAAQS through the RFP requirements. Thus, the EPA determines an area's compliance with RFP in conjunction with determining its compliance with the quantitative milestone requirement. Because RFP is an annual emission reduction requirement and the quantitative milestones are to be achieved every three years, when a state demonstrates compliance with the quantitative milestone requirement, it will demonstrate that RFP has been achieved during each of the relevant three years. Quantitative milestones should provide an objective means to evaluate progress toward attainment meaningfully, *e.g.,* through imposition of emission controls in the attainment plan and the requirement to quantify those required emission reductions. The CAA also requires milestone reports (due 90 days after each milestone), and these reports should include calculations and any assumptions made concerning how RFP

[441] Addendum at 42015.

[442] *Id.*

[443] Addendum at 42015.

[444] Addendum at 42016.

[445] *Id.*

has been met, *e.g.,* through quantification of emission reductions to date.[446]

The CAA does not specify the starting point for counting the three-year periods for quantitative milestones under CAA section 189(c). In the General Preamble and Addendum, EPA interpreted the CAA to require that the starting point for the first three-year period be the due date for the Moderate area plan submission.[447] In keeping with this historical approach, EPA is proposing to establish December 31, 2014 as the starting point for the first 3-year period under CAA section 189(c) for the 1997 $PM_{2.5}$ standards in the SJV. This date was the due date established in the EPA's June 2, 2014 Deadline and Classification Rule for the State's submission of any additional attainment-related SIP elements necessary to satisfy the subpart 4 Moderate area requirements for the 1997 $PM_{2.5}$ standards in the SJV area.[448] December 31, 2017 and December 31, 2020 would then be the milestone dates that the Serious Area plan must address, at minimum. The EPA believes that establishing December 31, 2017 as the first quantitative milestone date is an appropriate means for implementing the requirements of subpart 4 prospectively.

2. RFP Demonstration and Quantitative Milestones in the 2015 $PM_{2.5}$ Plan

The RFP demonstration and quantitative milestones appear in Chapter 6, section 6.3 (pp. 6–6 to 6–8) of the 2015 $PM_{2.5}$ Plan. Further discussion of the RFP demonstration, particularly with respect to ammonia, and the establishment of dates, content, and a reporting commitment for quantitative milestones, appears in CARB's Staff Report (pp. 25–26). In addition, by letter dated December 15, 2015, CARB's Executive Officer committed to submit a SIP revision to supplement the quantitative milestone portion of the 2015 $PM_{2.5}$ Plan by December 31, 2016 (''QM Letter'').[449]

The Plan estimates that emissions of direct $PM_{2.5}$, NO_X, and SO_X will decline from the 2012 base year to 2020 and states that emissions of each of these pollutants will remain below the levels needed to show ''generally linear progress'' from 2012 to 2020, the year that the Plan projects to be the earliest practicable attainment date for the 1997 annual $PM_{2.5}$ standard.[450] The Plan's emissions inventory shows that direct $PM_{2.5}$, NO_X, and SO_X are emitted by a large number and range of sources in the SJV and the emission reductions needed for these pollutants are inventory wide.[451] The District followed the procedures in the 2007 $PM_{2.5}$ Implementation Rule to calculate 2014 and 2017 RFP targets (or ''benchmark'' emission levels) for direct $PM_{2.5}$, NO_X, and SO_X and then concluded that projected emission levels for each pollutant, based on its adopted control strategy, would be below those targets in both milestone years.[452]

The BACM control strategy that provides the basis for these emissions projections is described in Chapters 5 and 7 and Appendices C and D of the Plan. For stationary and area sources, the Plan highlights several rules that are projected to contribute to attainment of the $PM_{2.5}$ standards.[453] For example, Rule 4354 (''Glass Melting Furnaces'') controls emissions of NO_X, SO_X, and PM from industrial glass manufacturing—the largest source of SO_X emissions in the San Joaquin Valley—and its emissions projections are presented in Appendix C as part of the Plan's BACM and MSM analysis.[454] Similarly, Rule 4901 (''Wood Burning Fireplaces and Wood Burning Heaters'') controls emissions from residential wood burning and addresses the largest combustion source of direct $PM_{2.5}$.[455] Measures to control dust sources of direct $PM_{2.5}$ are also presented in the Plan's BACM and MSM analyses and reflected in the Plan's baseline emission projections. Examples of such measures include Rule 4550 (''Conservation Management Practices'')[456] and Rule 8061 (''Paved and Unpaved Roads'').[457] For mobile sources, the Plan lists numerous CARB regulations and discusses the key regulations that limit the emission of direct $PM_{2.5}$ and NO_X from on-road and non-road mobile sources.[458] For instance, the regulations that apply to the two largest sources of NO_X in the San Joaquin Valley—heavy, heavy-duty diesel trucks and farm equipment—are discussed in Appendix C and their emission projections are presented in the Plan's emissions inventory.[459]

With respect to ammonia, the 2015 $PM_{2.5}$ Plan projects an increase in annual average ammonia emissions from 329.5 tpd in 2012 to 358.0 tpd in 2020.[460] The Plan states that both NO_X and ammonia participate in forming ammonium nitrate (*i.e.,* secondary $PM_{2.5}$) but that NO_X emission reductions are an order of magnitude more effective at reducing ambient $PM_{2.5}$ than ammonia reductions.[461] Based on the relative insensitivity of ambient $PM_{2.5}$ levels to ammonia reductions compared to NO_X reductions, the Plan states that ammonia is not a significant precursor to ambient $PM_{2.5}$ in the SJV[462] and thus that an RFP demonstration for ammonia is not required.[463] The Plan also states that NO_X emission levels are projected to be well below the levels needed to show generally linear progress toward attainment. The CARB Staff Report provides additional analysis by converting the increase in ammonia emissions into ''NO_X equivalent'' emission levels (using a ''NO_X equivalency'' calculation method) and demonstrating that the ''NO_X equivalent'' emissions level continues to show linear progress toward attainment from 2012 to 2020.[464]

The NO_X equivalency method used in the Plan relies on the sensitivity of ambient $PM_{2.5}$ levels to decreases in ammonia emissions compared to decreases in NO_X emissions, as modeled at the Bakersfield-California monitoring site. The Plan states that in the San Joaquin Valley ammonia emission reductions are only 10% as effective as NO_X emission reductions, with a

[446] *Id.* at 42016, 42017.

[447] General Preamble at 13539, Addendum at 42016.

[448] 79 FR 31566 (June 2, 2014) (final rule establishing subpart 4 moderate area classifications and deadline for related SIP submissions) (''Classification and Deadline Rule''). Although the Classification and Deadline Rule did not affect any action that EPA had previously taken under CAA section 110(k) on a SIP for a $PM_{2.5}$ nonattainment area, EPA noted that states may need to submit additional SIP elements to fully comply with the applicable requirements of subpart 4, even for areas with previously approved $PM_{2.5}$ attainment plans, and that the deadline for any such additional plan submissions was December 31, 2014. *Id.* at 31569.

[449] Letter from R. Corey, Executive Officer, CARB to J. Blumenfeld, Regional Administrator, U.S. EPA Region 9, December 15, 2015.

[450] 2015 $PM_{2.5}$ Plan, Chapter 6, Table 6–8 (''RFP Target Demonstration (2014 and 2017)''), p. 6–8.

[451] 2015 $PM_{2.5}$ Plan, Appendix B.

[452] 2015 $PM_{2.5}$ Plan, pp. 6–6 to 6–8.

[453] 2015 $PM_{2.5}$ Plan, Chapter 7, Section 7.1.1, pp. 7–2 to 7–6.

[454] 2015 $PM_{2.5}$ Plan, Chapter 7, pp. 7–3 to 7–4 and Appendix C, p. C–102.

[455] 2015 $PM_{2.5}$ Plan, Chapter 7, p. 7–4 and Appendix C, p. C–157.

[456] 2015 $PM_{2.5}$ Plan, Appendix C, p. C–108.

[457] 2015 $PM_{2.5}$ Plan, Appendix C, p. C–194.

[458] 2015 $PM_{2.5}$ Plan, Chapter 7, Section 7.1.3, pp. 7–6 to 7–13.

[459] 2015 $PM_{2.5}$ Plan, Appendix D, pp. D–8 to D–12 (for heavy heavy duty trucks) and D–15 (for farm equipment) and Appendix B, p. B–7.

[460] 2015 $PM_{2.5}$ Plan, Appendix B, p. B–19.

[461] *Id. See also,* 2015 $PM_{2.5}$ Plan, Chapter 2, p. 2–27, which concludes the District's analysis of the relationship between ammonia emissions and ambient $PM_{2.5}$ levels by stating that ''ammonia reductions at the Bakersfield-California site are only. . . 10% as effective as NO_X reductions.''

[462] 2015 $PM_{2.5}$ Plan, Chapter 2, section 2.6 (''Insignificant Precursors to $PM_{2.5}$ Concentrations in the Valley'').

[463] 2015 $PM_{2.5}$ Plan, CARB Staff Report, p. 26.

[464] 2015 $PM_{2.5}$ Plan, CARB Staff Report, pp. 25–26.

relative sensitivity factor of 0.1.[465] Stated alternatively, this is a 1:10 NO_X for ammonia trading ratio, *i.e.,* it takes 1 tpd of NO_X emissions to match the ambient effect of 10 tpd of ammonia in this area. The State calculates the change in ammonia emissions from the base year (2012) to each RFP milestone year[466] (2014 and 2017), and multiplies it by the trading ratio to calculate a NO_X increase equivalent to the ammonia increase, which the State then adds to the NO_X emissions inventory for each RFP milestone year to calculate the total NO_X decrease and ammonia increase expressed as ''NO_X equivalent'' emission levels.[467] The CARB Staff Report states that the total NO_X equivalent emissions levels are below the linear reductions in NO_X necessary to demonstrate RFP and, therefore, that the RFP requirement is met, despite the projected increase in the ammonia inventory.

Control measures for ammonia sources are described in Appendix C of the Plan. For example, ammonia controls resulting from Rule 4570 (''Confined Animal Facilities''), Rule 4565 (''Biosolids, Animal Manure, and Poultry Litter Operations''), and Rule 4566 (''Organic Material Composting'') are discussed at length in section C.41 of Appendix C and their emission projections are presented collectively under farming operations in the Plan's emissions inventory.[468] We discuss these control measures more fully in section V.D of this preamble (''Best Available Control Measures and Most Stringent Measures'') and in the EPA's SJV Rules TSD.

With respect to quantitative milestones, the CARB Staff Report states that the Plan identifies RFP emissions levels for direct $PM_{2.5}$, NO_X, and SO_X for 2014 and 2017 that show generally linear progress towards attaining the annual standard in 2020, and that ''[t]hese emission levels for 2017 along with the 2020 attainment emission levels serve as the quantitative milestones required under the Act.''[469] CARB addresses the projected increase in ammonia emissions over the planning period by evaluating those emissions in light of the atmospheric response to NO_X and ammonia emissions in the San Joaquin Valley area and concluding that ''the combined emission levels of NO_X and ammonia that are projected to occur through the 2020 attainment year provide for the required generally linear air quality progress.''[470] The CARB Staff Report also states California's commitment to provide letters to EPA ''reporting that the emission inventory milestones have been met and the status of any emission reduction commitments,'' and to provide these letters by March 31, 2018 for the 2017 milestone and by March 31, 2021 for the 2020 milestone.[471]

Additionally, the QM Letter contains the State's commitment to submit, by December 31, 2016, a SIP revision that supplements the quantitative milestone portion of the 2015 $PM_{2.5}$ Plan by identifying specific quantitative milestones to be achieved by the 2017 RFP milestone year and 2020 attainment year that demonstrate reasonable further progress toward timely attainment of the $PM_{2.5}$ NAAQS. The QM Letter states that this SIP revision will include the following milestones to track implementation of control measures and emissions levels at each milestone year: (1) A list of measures in the Plan's BACM/BACT and MSM control strategy and key implementation requirements through 2017 and 2020, including compliance milestones for the State's Truck and Bus Rule and the District's residential wood burning rule (Rule 4901), (2) compliance with the State's and District's enforceable commitments in the Plan by the 2017 milestone date, and (3) updated emissions inventories for both 2017 and 2020.[472] The QM Letter also states that the SIP revision will identify appropriate air quality quantitative milestones for 2017 and 2020 designed to evaluate air quality progress resulting from implementation of the Plan's control strategy, including an assessment of monitored ambient $PM_{2.5}$ concentrations and other variables affecting ambient $PM_{2.5}$ concentrations in each of those years.[473]

3. Evaluation and Proposed Actions

Reasonable Further Progress Demonstration

With respect to direct $PM_{2.5}$, NO_X, and SO_2, we agree that ''generally linear progress'' is an appropriate measure of RFP for the 1997 $PM_{2.5}$ NAAQS in the SJV area given that, as the Plan documents, direct $PM_{2.5}$, NO_X, and SO_X are emitted by a large number and range of sources in the SJV, the emission reductions needed for these pollutants are inventory wide,[474] and secondary particulates contribute significantly to ambient $PM_{2.5}$ levels in the SJV area.[475]

The 2015 $PM_{2.5}$ Plan documents the State's conclusion that all BACM, BACT, and MSM for these pollutants are being implemented as expeditiously as practicable and identifies projected levels of direct $PM_{2.5}$, NO_X, and SO_X emissions in 2014 and 2017 that reflect full implementation of the State's and District's BACM/BACT and MSM control strategy for these pollutants.[476] For example, Rule 4550 (''Conservation Management Practices'') was adopted in 2004 and its requirements to control PM_{10} emissions (including $PM_{2.5}$) from on-field crop and animal feeding operations are fully implemented.[477] These operations represent the largest dust sources of direct $PM_{2.5}$ in the San Joaquin Valley.[478] More recently, SJVUAPCD revised Rule 4901 (''Wood Burning Fireplaces and Wood Burning Heaters'') in September 2014 by strengthening the District's curtailment program for residential wood burning, thereby further limiting emissions from San Joaquin Valley's largest combustion source of direct $PM_{2.5}$.[479] These rule amendments provide part of the incremental emission reductions of direct $PM_{2.5}$ from the 2014 to 2017 RFP milestone years and through the 2018 and 2020 attainment years.[480]

[465] 2015 $PM_{2.5}$ Plan, Chapter 2, p. 2–27. Note that Bakersfield-California is projected to be the design value monitor for the SJV in 2018 with respect to the 1997 24-hour $PM_{2.5}$ standard. 2015 $PM_{2.5}$ Plan, Appendix F, Table F–1 (''Projected 2018 and 2020 Design Values''), p. F–7.

[466] We use ''RFP milestone year'' to mean each year for which the Plan provides an RFP analysis and related emissions projections.

[467] That is, $(NO_X \text{ emissions})_{2017} + [(NH_3 \text{ emissions})_{2017} - (NH_3 \text{ emissions})_{2012}] * 0.1 = (\text{total } NO_X \text{ equivalent emissions})_{2017}$. Using values from the 2015 $PM_{2.5}$ Plan, the 17.5 tpd increase in ammonia emissions from 2012 to 2017 is equivalent to a 1.8 tpd increase in NO_X emissions, as follows: 235.7 + [347.0 − 329.5]*0.1 = 237.5 tpd. *See* CARB Staff Report, p. 26, Table 12.

[468] 2015 $PM_{2.5}$ Plan, Appendix C, Section C.41, pp. C–240 to C–281 and Appendix B, p. B–17.

[469] 2015 $PM_{2.5}$ Plan, CARB Staff Report, p. 26.

[470] *Id.*

[472] QM Letter, pp. 1–2.

[473] *Id.,* p. 2.

[474] 2015 $PM_{2.5}$ Plan, Appendix B.

[475] 2015 $PM_{2.5}$ Plan, Chapter 5, Section 5.4.1 (''Significance Determination Approach'').

[476] 2015 $PM_{2.5}$ Plan, Chapter 6, Section 6.3, and Appendix B. *See also* our discussion of BACM/BACT in section V.D of this proposed rule.

[477] 2015 $PM_{2.5}$ Plan, Appendix C, pp. C–106 to C–107.

[478] 2015 $PM_{2.5}$ Plan, Chapter 5, Table 5–2, pp. 5–7 to 5–8. *See also* 2015 $PM_{2.5}$ Plan, Appendix B, p. B–2,

[479] 2015 $PM_{2.5}$ Plan, Chapter 7, p. 7–4 and Appendix C, p. C–156. *See also* 2015 $PM_{2.5}$ Plan, Appendix B, p. B–2.

[480] 2015 $PM_{2.5}$ Plan, CARB Staff Report, p. 9.

The Truck and Bus Regulation and Drayage Truck Regulation became effective in 2011 and have rolling compliance deadlines based on truck engine model year. These and other regulations applicable to heavy duty diesel trucks will continue to reduce emissions of diesel particulate matter and NO_X through the RFP and attainment planning years.[481] For instance, model year 1994 and 1995 heavy heavy duty diesel truck engines must be upgraded to meet the 2010 model year truck engine emission standards by 2016, and model year 1996–1999 engines must by upgraded by January 1, 2020.[482] The emission reductions from these rules represent the largest portion of the NO_X emission reductions upon which the Plan's attainment and RFP demonstrations rely.[483] With respect to SO_X emissions, Rule 4354 (''Glass Melting Furnaces'') was amended in May 2011, establishing SO_X emission limits with compliance deadlines through January 1, 2014.[484] This rule will achieve emission reductions through the 2017 RFP milestone year and 2018 and 2020 attainment years. As explained in section V.D of this preamble, we are proposing to find that the State and District are implementing these BACM, BACT and MSM provisions for the 1997 $PM_{2.5}$ NAAQS as expeditiously as practicable.

Additionally, the method used to calculate RFP target (or ''benchmark'') emission levels for direct $PM_{2.5}$, NO_X, and SO_2 is generally consistent with the method provided in the 2007 $PM_{2.5}$ Implementation Rule (40 CFR 51.1009(f)). We note that the 2015 $PM_{2.5}$ Plan calculates the 2014 and 2017 RFP benchmark emission levels using 2020 attainment emissions levels that are not consistent with the attainment targets presented in CARB's Staff Report.[485] We have, however, re-calculated the RFP benchmark emissions levels for these years using the attainment targets found in the CARB Staff Report,[486] as shown in Table 10 below. The EPA's calculations indicate that the Plan's projected 2014 and 2017 emission levels for direct $PM_{2.5}$, NO_X, and SO_X are below the RFP benchmark emission levels for these years.[487]

TABLE 10—EPA CALCULATION OF 2015 $PM_{2.5}$ PLAN RFP DEMONSTRATION

[tpd, based on annual averages]

	2012 Emissions inventory [a]	2020 Attainment target [b]	Annual incremental reduction [c]	2014 RFP Benchmark	2014 Projected emissions [d]	2017 RFP Benchmark	2017 Projected emissions [d]
Direct $PM_{2.5}$	66.0	60.8	0.65	64.7	63.3	62.75	62.5
NO_X	332.2	206.5	15.71	300.78	284.2	253.63	235.7
SO_X	8.1	7.8	0.04	8.03	7.4	7.91	7.6

[a] 2015 $PM_{2.5}$ Plan, Chapter 6, Table 6–6, p. 6–7.
[b] 2015 $PM_{2.5}$ Plan, CARB Staff Report, Table 1, p. 9.
[c] Annual incremental reduction = (2012 emissions inventory − 2020 attainment target)/(2020 − 2012).
[d] 2015 $PM_{2.5}$ Plan, Chapter 6, Table 6–8, p. 6–8.

With respect to ammonia, the 2015 $PM_{2.5}$ Plan shows an 8.6% increase in total ammonia emissions during the 2012 to 2020 period.[488] Unlike the wide range of sources emitting direct $PM_{2.5}$, NO_X, and SO_2 in the Valley, emissions of ammonia are almost entirely from three source categories: confined animal facilities (CAFs), fertilizer application, and composting, with more than half of all emissions coming from CAFs.[489] Collectively, these three categories emit 95% of all ammonia emissions in the 2012 annual average base year inventory.[490]

Several District measures already in the SIP for the SJV area control ammonia emissions from two of these source categories. District Rule 4570 (''Confined Animal Facilities'') required implementation of control measures to reduce VOCs in 2008 and required full compliance by affected sources by mid-2012.[491] Many of the VOC control measures have an ammonia co-benefit, and the District estimates a 100 tpd reduction in ammonia from this rule, which have been accounted for in the emissions inventory of the 2015 $PM_{2.5}$ Plan.[492] The Plan also indicates that implementation of District Rule 4565 (''Biosolids, Animal Manure, and Poultry Litter Operations''), adopted March 15, 2007,[493] and Rule 4566 (''Organic Material Composting Operations''), adopted August 18, 2011,[494] resulted in some ammonia reductions, but these reductions are not reflected in the base year or baseline inventories. As discussed in section V.D of this proposed rule, we are proposing to determine that each of these measures implements BACM and MSM for the control of ammonia as a precursor to $PM_{2.5}$ in the San Joaquin Valley for purposes of the 1997 $PM_{2.5}$ NAAQS.

The statement in the Plan that ammonia is an insignificant precursor in the SJV area is based on the State's analysis of the relative sensitivity of ambient $PM_{2.5}$ levels to changes in ammonia emissions as compared to NO_X emissions. The State relies in part on information previously presented in

[481] 2015 $PM_{2.5}$ Plan, Chapter 7, p. 7–9 to 7–10 and Appendix D, pp. D–8 to D–11.

[482] Title 13, California Code of Regulations, Section 2025 (''Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants, from In-Use Heavy-Duty Diesel-Fueled Vehicles''), paragraphs (e), (f), and (g), effective December 14, 2011. *See also* EPA's final rule approving CARB's Truck and Bus Rule. 77 FR 20308 at 20309–20310 (April 4, 2012).

[483] 2015 $PM_{2.5}$ Plan, Appendix B, p. B–7.

[484] 2015 $PM_{2.5}$ Plan, Chapter 7, pp, 7–3 to 7–4.

[485] 2015 $PM_{2.5}$ Plan, Chapter 6, Table 6–6, p. 6–7 vs. CARB Staff Report, p. 9.

[486] 2015 $PM_{2.5}$ Plan, CARB Staff Report, Table 1, p. 9.

[487] For example, the 2017 RFP benchmark for direct $PM_{2.5}$ should account for five years' worth of annual incremental reductions and is calculated as (2012 emission inventory) − (annual increment reduction)*5 = 66.0 tpd − (0.65 tpd/yr)*5 = 62.75 tpd. The projected emissions inventory for direct $PM_{2.5}$ in 2017 is 62.5 tpd, which is less than this RFP benchmark.

[488] 2015 $PM_{2.5}$ Plan, Appendix B, Table B–5.

[489] In the inventories provided in Appendix B of the Plan, emissions from these sources are found in the categories ''Farming Operations'', ''Pesticides/Fertilizers'', and ''Other (Waste Disposal)'', respectively.

[490] 2015 $PM_{2.5}$ Plan, Appendix B, Table B–5 (''Ammonia''), pp. B–16 to B–19. The three categories comprising this 95% of emissions in the ammonia emission inventory are Other (Waste Disposal), Pesticides/Fertilizers, and Farming Operations.

[491] 2015 $PM_{2.5}$ Plan, Appendix C, pp. C–240 to C–243.

[492] 2015 $PM_{2.5}$ Plan, Appendix C, pp. C–240 to C–241. *See also,* Memo to file, ''Call with California Air Resources Board regarding VOC and ammonia emissions inventory,'' R. Mays, EPA Region 9, September 30, 2015.

[493] 2015 $PM_{2.5}$ Plan, Appendix C, pp. C–276.

[494] 2015 $PM_{2.5}$ Plan, Appendix C, pp. C–272 to C–273.

the 2012 $PM_{2.5}$ Plan for the 2006 24-hour $PM_{2.5}$ standard to justify a NO_X for ammonia trading ratio of 0.1. The 2012 $PM_{2.5}$ Plan contains modeling results and states that ''reductions in ammonia are approximately nine times less effective than NO_X.'' [495] The 2012 $PM_{2.5}$ Plan also gives ammonia and NO_X sensitivities (ambient $PM_{2.5}$ changes in $\mu g/m^3$ per tpd of emission reductions), based on modeling of the ambient effect of a 25% area-wide reduction in each pollutant.[496] The ratios of these sensitivities give an ammonia-NO_X relative sensitivity ratio, or NO_X for ammonia trading ratio, of 0.10 for the Bakersfield-California site, and 0.11 (about 1/9) for the Bakersfield-Planz site.[497]

The 2015 $PM_{2.5}$ Plan similarly reflects the State's conclusion that ammonia emission reductions are about 10% as effective as NO_X reductions in decreasing ambient $PM_{2.5}$ concentrations.[498] We have reviewed the modeling analysis from which the State and District derived the 0.1 NO_X for ammonia trading ratio and propose to find that this ratio is a reasonable estimate of the sensitivity of ambient $PM_{2.5}$ to ammonia reductions relative to NO_X reductions, at least for the Bakersfield-California and Bakersfield-Planz monitoring sites for which the analysis was performed. For further discussion of our evaluation of this trading ratio for purposes of the Plan's RFP demonstration, *see* section IV.A of the EPA's Interpollutant Trading Ratios TSD.

The Bakersfield-California site is projected to be the design value site for the 1997 24-hour $PM_{2.5}$ standard in 2018,[499] which addresses the requirement of 40 CFR 51.1009(h) that an equivalent method for demonstrating RFP must do so at the design value monitoring site within the nonattainment area. As discussed in section V.E.5 of this proposed rule, although the State had initially projected the Madera site to be the design value site for the 1997 annual $PM_{2.5}$ standard in 2020, based on weight of evidence, it now appears the Bakersfield-Planz site will most likely be the design value site for the annual $PM_{2.5}$ standard in 2020. Either way, the 0.1 ammonia-NO_X relative sensitivity factor is adequate for the RFP demonstration because it is derived from modeling analyses that account for emission projections at both of these Bakersfield monitoring sites.

Taking the ammonia emissions increases into account, the NO_X equivalent emission levels presented in the Plan [500] for the 2014 and 2017 RFP milestone years fall below the benchmark RFP NO_X emissions levels for those same years.[501] In essence, the substantial reduction of NO_X emissions that is projected to result from the Plan's control strategy (*i.e.,* 37.8% reduction) from 2012 to 2020 [502] appears to more than offset the increase in ammonia emissions (*i.e.,* 8.6% increase) that is projected to occur during that same period.[503] More specifically, as shown in Table 11, taking into account the increase in ammonia emissions during the 2012 to 2020 period, the NO_X equivalent emission levels projected in the Plan for the 2014 and 2017 RFP milestone years are 5–6% lower than the levels representing generally linear NO_X emission reductions for those same years, thus showing NO_X emission reductions at a rate faster than the benchmark scenario.

TABLE 11—COMPARISON OF NO_X EQUIVALENT EMISSIONS TO RFP LINEAR EMISSIONS LEVEL FOR NO_X FOR RFP MILESTONE YEARS

[tpd, except row G]

		2012	2014	2017
A	NO_X Emissions	332.2	284.2	235.7
B	Ammonia Emissions	329.5	336.2	347.0
C	NO_X equivalent of ammonia increase	.....	0.7	1.8
D	Total NO_X Equivalent Emissions (A+C)	.....	284.9	237.5
E	RFP Linear Level for NO_X	.....	300.9	253.9
F	Total NO_X Equivalent Emission Reductions Beyond RFP Linear Level (E–D)	.....	16.0	16.4
G	% Below RFP Linear Level (F/E)	.....	5.3%	6.5%

Source: 2015 $PM_{2.5}$ Plan, CARB Staff Report, Table 12, p. 26.

As discussed in section V.C of this proposed rule, we are proposing to determine that VOCs do not contribute significantly to ambient $PM_{2.5}$ levels that exceed the 1997 $PM_{2.5}$ standards in the SJV and, accordingly, that no RFP demonstration for VOCs is necessary for purposes of the 1997 $PM_{2.5}$ standards in this area.

In sum, the 2015 $PM_{2.5}$ Plan demonstrates that emissions of direct $PM_{2.5}$, NO_X and SO_X will be reduced at rates representing generally linear progress toward attainment, and that the increase in ammonia emissions over the 2012–2020 planning period will be more than offset by substantial NO_X emission reductions exceeding the amounts necessary to show generally linear progress toward attainment. The Plan also demonstrates that all BACM, BACT and MSM that provide the bases for the direct $PM_{2.5}$, NO_X, SO_X, and ammonia emissions projections in the RFP analysis in the Plan are being implemented as expeditiously as practicable. Accordingly, we propose to determine that the Plan requires the annual incremental reductions in emissions of direct $PM_{2.5}$ and relevant $PM_{2.5}$ precursors that are necessary for the purpose of ensuring attainment of the 1997 24-hour and annual $PM_{2.5}$

[495] 2012 $PM_{2.5}$ Plan, Appendix G (''Weight of Evidence Analysis''), p. 64.

[496] 2012 $PM_{2.5}$ Plan, Appendix G, Table 7, p. 65.

[497] The difference between these two figures is about 0.1% when carried through in the calculation of the NO_X equivalent of ammonia.

[498] 2015 $PM_{2.5}$ Plan, Chapter 2, pp. 2–27 (stating that ''ammonia reductions at the Bakersfield-California site are . . . only 10% as effective as NO_X reductions''); *see also* CARB Staff Report, p. 26 and Table 12 (expressing NO_X and ammonia emissions combined as ''NO_X equivalent'' emission levels).

[499] 2015 $PM_{2.5}$ Plan, Appendix F, Table F–1 (''Projected 2018 and 2020 Design Values''), p. F–7.

[500] 2015 $PM_{2.5}$ Plan, CARB Staff Report, p. 26.

[501] This approach is consistent with the regulatory option of 40 CFR 51.1009(g)(2) that the RFP plan demonstrate emission levels that are ''projected to result in a generally equivalent improvement in air quality by the milestone year as would be achieved under the benchmark RFP plan.''

[502] 2015 $PM_{2.5}$ Plan, Appendix B, Table B–2, p. B–8 and CARB Staff Report, p. 9. Emissions of NO_X are project to decrease from 332.2 tpd in 2012 to 206.5 tpd in 2020 (*i.e.,* a decrease of 125.7 tpd or 37.8%).

[503] 2015 $PM_{2.5}$ Plan, Appendix B, Table B–5, p. B–19. Emissions of ammonia are project to increase 329.5 tpd in 2012 to 358.0 tpd in 2020 (*i.e.,* an increase of 28.5 tpd or 8.6%).

standards by 2018 and 2020, respectively, in accordance with the requirements of CAA sections 171(1) and 172(c)(2).

Quantitative Milestones

Although the RFP emission levels identified in the Plan for the 2017 and 2020 milestone years represent generally linear progress toward attainment by 2018 and 2020, the Plan as originally submitted in June 2015 does not identify an objective means for evaluating the area's compliance with these emission targets or progress toward attainment, other than through 2017 and 2020 emissions levels and CARB's commitment to report on the ''status of any emission reduction commitments'' in the Plan. We note that the Plan contains only one emission reduction commitment: To adopt amendments to District Rule 4692 (''Commercial Charbroiling'') in 2016 and to achieve 0.4 tpd of direct $PM_{2.5}$ emission reductions through implementation of this amended rule or a substitute rule achieving equivalent emission reductions.[504] Such a milestone would not provide an adequate means to evaluate progress toward attainment of the $PM_{2.5}$ NAAQS in the SJV, consistent with RFP requirements.

In the QM Letter, however, CARB committed to adopt and submit, no later than December 31, 2016, a revision to the 2015 $PM_{2.5}$ Plan that identifies specific milestones demonstrating progress toward attainment of the 24-hour $PM_{2.5}$ standard by December 31, 2018 and the annual $PM_{2.5}$ standard by December 31, 2020. The QM Letter describes the specific components of this SIP revision that CARB will adopt and submit by December 31, 2016, including milestones to track implementation of specific SIP control measures and commitments, and air quality milestones to be achieved by the 2017 RFP milestone year and 2020 attainment year. Two of the control measures identified in the QM Letter are responsible for a significant portion of the NO_X and direct $PM_{2.5}$ emission reductions necessary for RFP and attainment: CARB's Truck and Bus Rule and the District's residential wood burning rule (Rule 4901). Emissions from heavy heavy duty trucks and residential wood burning are the largest combustion sources of NO_X and direct $PM_{2.5}$ in San Joaquin Valley, and the Truck and Bus Rule and Rule 4901 achieve the largest amounts of NO_X and direct $PM_{2.5}$ emission reductions, respectively, identified in the Plan's attainment demonstration.[505] The District's commitment in the Plan to amend Rule 4692 (''Commercial Charbroiling'') in 2016 and to achieve 0.4 tpd of direct $PM_{2.5}$ emission reductions through implementation of this amended rule or a substitute rule achieving equivalent emission reductions [506] also accounts for a portion of the direct $PM_{2.5}$ emission reductions necessary for RFP and attainment in the Plan.[507] These implementation milestones, together with the updated emission inventories and air quality milestones for 2017 and 2020 that the State has also committed to identify as quantitative milestones in the SIP revision, would provide an objective means to evaluate the area's progress in achieving not only the incremental emissions reductions but also the incremental air quality improvements necessary to attain the 24-hour and annual $PM_{2.5}$ NAAQS by 2018 and 2020, respectively.

Under section 110(k)(4) of the Act, EPA may conditionally approve a plan revision based on a commitment by the State to adopt specific enforceable measures by a date certain but not later than 1 year after the date of the plan approval. Based on CARB's commitments to submit the specific SIP revisions identified in the QM Letter by December 31, 2016, as discussed above, we propose to conditionally approve the quantitative milestone component of the 2015 $PM_{2.5}$ Plan.

We note that, consistent with the requirements of CAA section 189(c)(2) as interpreted in longstanding EPA policy, each of the milestone reports due March 31, 2018 (for the December 31, 2017 milestone date) and March 31, 2021 (for the December 31, 2020 milestone date) should include technical support sufficient to document completion statistics for appropriate milestones, *e.g.,* calculations and any assumptions made concerning emission reductions to date.[508]

G. Contingency Measures

1. Requirements for Contingency Measures

Under CAA section 172(c)(9), $PM_{2.5}$ attainment plans must include contingency measures to be implemented if an area fails to meet RFP (''RFP contingency measures'') or fails to attain the $PM_{2.5}$ standards by the applicable attainment date (''attainment contingency measures''). Under subpart 4, however, the EPA interprets section 172(c)(9) in light of the specific requirements for particulate matter nonattainment areas. Section 189(b)(1)(A) differentiates between attainment plans that provide for timely attainment and those that demonstrate that attainment is impracticable. The 2015 $PM_{2.5}$ Plan is a Serious area plan that demonstrates attainment of the 1997 24-hour $PM_{2.5}$ NAAQS by December 31, 2018 and attainment of the 1997 annual $PM_{2.5}$ NAAQS by December 31, 2020, and thus, must include contingency measures for RFP and attainment.

The purpose of contingency measures is to continue progress in reducing emissions while a state revises its SIP to meet the missed RFP requirement or to correct continuing nonattainment. The principle requirements for contingency measures are: [509]

- Contingency measures must be fully adopted rules or control measures that are ready to be implemented quickly upon failure to meet RFP or failure of the area to meet the relevant NAAQS by the applicable attainment date.
- The SIP should contain trigger mechanisms for the contingency measures, specify a schedule for implementation, and indicate that the measures will be implemented without further action by the State or by the EPA. In general, we expect all actions needed to affect full implementation of the measures to occur within 60 days after EPA notifies the State of a failure.
- The contingency measures should consist of other control measures for the area that are not already relied upon to

[504] 2015 $PM_{2.5}$ Plan, Chapter 7, p. 7–6, and SJVUAPCD Governing Board Resolution 15–4–7A, paragraph 7.

[505] For stationary and area sources, ''Residential Fuel Combustion'' is the largest combustion source of direct $PM_{2.5}$ in San Joaquin Valley (*e.g.,* 9.4 tpd of the total 2012 winter average emissions of 61.0 tpd) and CARB's Staff Report identifies Rule 4901 as achieving the largest portion of the direct $PM_{2.5}$ emission reductions for attaining 1997 $PM_{2.5}$ NAAQS (*e.g.,* 2.9 tpd of the Plan's 6.6 tpd total winter average emission reductions from 2012 to 2018). 2015 $PM_{2.5}$ Plan, Appendix B, p. B–2 and CARB Staff Report, p. 9. For all sources, ''Heavy Heavy Duty Diesel Trucks (HHDV)'' are the largest source of NO_X in the San Joaquin Valley (*e.g.,* 120.5 tpd of the total 2012 annual average emissions of 332.2 tpd) and the Plan estimates that the largest emission reductions of NO_X during the attainment planning period, for which the Truck and Bus Rule is a significant driver, will result from this source category (*e.g.,* 59.2 tpd of the 125.7 tpd annual average emission reductions from 2012 to 2020). 2015 $PM_{2.5}$ Plan, Appendix B, p. B–7 and CARB Staff Report, p. 9.

[506] 2015 $PM_{2.5}$ Plan, Chapter 7, p. 7–6, and SJVUAPCD Governing Board Resolution 15–4–7A, paragraph 7.

[507] The Plan estimates that the amendments to Rule 4692 will achieve 0.4 tpd of the Plan's 5.2 tpd total annual average emission reductions of direct $PM_{2.5}$ from 2012 to 2020. 2015 $PM_{2.5}$ Plan, CARB Staff Report, p. 9.

[508] Addendum at 42017.

[509] General Preamble at 13543–13544 and Addendum at 42014–42015.

demonstrate attainment (*e.g.,* to meet RACM/RACT, BACM/BACT, or MSM requirements) or to meet RFP.

• The measures should provide for emissions reductions equivalent to approximately one year of reductions needed for RFP calculated as the overall level of reductions needed to demonstrate attainment divided by the number of years from the base year to the attainment year.

Finally, we note that contingency measures can include federal, state, and local measures that are already scheduled for implementation or already implemented that provide for additional emissions reductions that are not relied on to demonstrate RFP or attainment. In other words, contingency measures are intended to achieve reductions over and beyond those relied on in the RFP and attainment demonstrations. Nothing in the CAA precludes a state from implementing such measures before they are triggered by a failure to meet RFP or a failure to attain by the applicable attainment date. EPA has approved numerous SIPs under this interpretation.[510]

2. Contingency Measures in the 2015 $PM_{2.5}$ Plan

The 2015 $PM_{2.5}$ Plan addresses the contingency measure requirement in Chapter 6, section 6.4 (''Contingency Measures'') of the Plan and in the CARB Staff Report, pages 26–27. Chapter 6, section 6.4 addresses contingency measure requirements for the 2014 and 2017 RFP milestone years and for the 2020 attainment year by discussing emission reductions to be achieved by already adopted measures, voluntary incentive programs, and inter-pollutant trading between $PM_{2.5}$ and NO_X for the 2020 attainment year. The CARB Staff Report, p. 26–27, provides a brief statement on contingency measures for the 2018 attainment year for the 24-hour $PM_{2.5}$ NAAQS and identifies several additional control measures to address the 2020 attainment year for the annual $PM_{2.5}$ NAAQS. Chapter 6 states that a year's worth of annual average emission reductions needed to demonstrate RFP (''One year's worth of RFP'') is calculated by taking the overall level of emission reductions needed to demonstrate attainment and dividing it by the number of years between the base year and attainment year.[511] Table 6–9 of the Plan (Contingency Emissions Reductions Target (tpd)) is reproduced below:

	Contingency Need = ''One year's worth of RFP''
Direct $PM_{2.5}$	0.4
NO_X	15.7
SO_X	0

Source: 2015 $PM_{2.5}$ Plan, Chapter 6, Section 6.4, Table 6–9.

Chapter 6 of the Plan identifies emission reductions to be achieved by the control strategy in the Plan in 2014 and 2017 that the District considers ''surplus'' to those reductions necessary to demonstrate RFP. The District states that these emission reductions are thus available to meet the contingency measure requirement.[512] Table 6–10 of the Plan (Reductions Surplus to RFP for Contingency (tpd)), reproduced below, identifies the $PM_{2.5}$ and NO_X emission reductions in 2014 and 2017 that the District considers ''surplus'' to RFP requirements:

Year	2014			2017		
	RFP target emissions level	Projected emissions inventory	Contingency	RFP target emissions level	Projected emissions inventory	Contingency
$PM_{2.5}$	65.2	63.3	1.9	64.0	62.5	1.5
NO_X	300.9	284.2	16.7	253.9	235.7	18.2

Source: 2015 $PM_{2.5}$ Plan, Chapter 6, Section 6.4, Table 6–10.

For the 2020 attainment year, the Plan provides estimates of emission reductions projected in 2021 from a combination of adopted state and local measures, including District Rules 4901, 4306, 4308, and 4905 for direct $PM_{2.5}$ and NO_X and mobile source measures for several source categories for NO_X.[513] Table 6–11 of the Plan identifies 1.6 tpd of direct $PM_{2.5}$ and 12.0 tpd of NO_X emission reductions as reductions that are available to meet the 2020 attainment contingency measure requirement. In order to address a shortfall of needed NO_X emission reductions, the District relies on inter-pollutant trading of direct $PM_{2.5}$ emission reductions for NO_X emission reductions at a ratio of 1:9 and, based on this analysis, concludes that there are sufficient emission reductions to meet the attainment contingency requirement.[514] The CARB Staff Report also addresses contingency measures for the 2020 attainment year. It identifies additional direct $PM_{2.5}$ and NO_X emission reductions to be achieved by the following control measures: ARB mobile source measures, the Portable Equipment Registration Program (PERP) and Airborne Toxic Control Measure (ATCM), Indirect Source Review (ISR) on-site mitigation (*i.e.,* District Rule 9510), and the AERO [515] rule (*i.e.,* District Rule 4320). Based on these analyses, CARB concludes that the SIP control strategy achieves emission reductions sufficient to meet the attainment contingency measure requirement for the annual $PM_{2.5}$ NAAQS.

Finally, for the 2018 attainment year for the 24-hour $PM_{2.5}$ NAAQS, the CARB Staff Report states that ''additional reductions in 2019 provide 0.2 tpd of $PM_{2.5}$ and 10 tpd of NO_X reductions'' but does not identify the control measures that achieve these emission reductions.[516]

3. EPA's Evaluation of the 2015 $PM_{2.5}$ Plan's Contingency Measures

The contingency measures portion of the 2015 $PM_{2.5}$ Plan contains several deficiencies.

First, the Plan incorrectly calculates one year's worth of RFP emission

[510] *See,* for example, 62 FR 15844 (April 3, 1997) (direct final rule approving Indiana ozone SIP revision); 62 FR 66279 (December 18, 1997) (final rule approving Illinois ozone SIP revision); 66 FR 30811 (June 8, 2001) (direct final rule approving Rhode Island ozone SIP revision); 66 FR 586 (January 3, 2001) (final rule approving District of Columbia, Maryland, and Virginia ozone SIP revisions); and 66 FR 634 (January 3, 2001) (final rule approving Connecticut ozone SIP revision); *see also LEAN* v. *EPA,* 382 F.3d 575 (5th Cir. 2004) (upholding contingency measures that were previously required and implemented where they were in excess of the attainment demonstration and RFP SIP).

[511] 2015 $PM_{2.5}$ Plan, Chapter 6, Section 6.4, p. 6–9, Table 6–9.

[513] 2015 $PM_{2.5}$ Plan, Chapter 6, Section 6.4, p. 6–11, Table 6–11.

[514] 2015 $PM_{2.5}$ Plan, p. 6–12, Table 6–12.

[515] AERO stands for Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater Than 5.0 MMBtu/hr.

[516] 2015 $PM_{2.5}$ Plan, CARB Staff Report, p. 27.

reductions. Although Chapter 6 of the Plan correctly describes the required steps for calculating one year's worth of annual average emission reductions needed to demonstrate RFP, the actual calculation in the Plan is based on 2020 baseline emission reductions estimates [517] rather than the attainment targets of 60.8 tpd of direct $PM_{2.5}$ and 206.5 tpd NO_X.[518] EPA recalculated one year's worth of RFP emission reductions based on the attainment emission levels presented in the Plan, as shown in Table 12 below.

TABLE 12—EPA'S CALCULATION OF ''ONE YEAR'S WORTH OF RFP'' USING ATTAINMENT EMISSIONS LEVELS

	2012 Base year emissions (tpd)	Calculation of ''One Year's Worth of RFP'' Using Attainment Emissions Levels (tpd)		
		2020 Attainment emissions (tpd)	Total emission reduction (tpd)	One year's worth of RFP emission reductions (tpd)
Direct $PM_{2.5}$	66.0	60.8	5.2	0.65
NO_X	332.2	206.5	125.7	15.7
SO_X	8.1	7.8	0.3	0.0

Source: 2015 $PM_{2.5}$ Plan, Chapter 6, Section 6.4, Table 6–6 and CARB Staff Report, p. 9.

Thus, according to EPA's calculation, one year's worth of RFP is 0.65 tpd of direct $PM_{2.5}$, 15.7 tpd of NO_X and 0.0 tpd of SO_X. The NO_X and SO_X values are essentially identical to the values identified in Chapter 6 of the Plan (and reproduced in Table 6–9 above), but EPA's calculation of the direct $PM_{2.5}$ emission reductions representing one year's worth of RFP is significantly higher than the value identified in Chapter 6 of Plan. Consequently, the Plan significantly underestimates the direct $PM_{2.5}$ emission reductions necessary to satisfy contingency measure requirements.

Second, the 2015 $PM_{2.5}$ Plan does not provide an adequate basis for the State's and District's conclusion that the emission reductions identified for contingency measure purposes are in fact ''surplus'' to the reductions needed to demonstrate RFP and timely attainment (*e.g.,* for RACM/RACT, BACM/BACT, or MSM). Section 6.4.2 of the Plan states that regulatory emission reductions to be achieved by 2014 and 2017 exceed the minimum emission reductions needed to demonstrate RFP in those years but does not provide a basis for the District's conclusion that the identified emission reductions are not relied on to satisfy RFP requirements. Similarly, the Plan provides no support for either the District's conclusion that ''additional $PM_{2.5}$ and NO_X reductions occurring between 2020 and 2021 can serve as attainment contingencies'' or the State's conclusion that ''[f]or the interim 24-hour 2018 attainment deadline, additional reductions in 2019 provide for 0.2 tpd of $PM_{2.5}$ and 10 tpd of NO_X reductions.'' [519]

Third, two of the control measures identified in the CARB Staff Report as contingency measures—SJVUAPCD Rule 4320 (AERO Rule) and SJVUAPCD Rule 9510 (ISR On-Site Mitigation)—are not creditable for SIP purposes at this time. Rule 4320 (AERO Rule) is not SIP-creditable because it contains provisions that allow owners and operators to pay a fee in lieu of complying with the rule's emission limits and which render the NO_X emission limits in the rule unenforceable.[520] Rule 9510 (ISR On-Site Mitigation) is not SIP-creditable because it likewise contains provisions that allow project developers to pay fees instead of implementing on-site pollution mitigation plans.[521]

Fourth, the contingency measure portion of the 2015 $PM_{2.5}$ Plan indicates that the District is relying on ''SIP-creditable incentive-based emissions reductions'' to address contingency measure requirements but does not identify the specific incentive grant programs expected to provide the requisite emission reductions, nor does it provide the documentation and related enforceable commitments necessary to support a SIP submission that relies on incentive programs for SIP emission reduction credit.[522] Finally, the contingency measure portion of the 2015 $PM_{2.5}$ Plan does not discuss ammonia emissions or provide any basis for a conclusion that contingency measures for purposes of ammonia are not necessary to satisfy the statutory requirements.

In sum, the 2015 $PM_{2.5}$ Plan does not contain or identify SIP-creditable measures that are surplus to RFP and attainment needs and that are sufficient to achieve at least one year's worth of emission reductions for each of the RFP and attainment years identified in the Plan. Accordingly, we propose to disapprove the contingency measure portion of the 2015 $PM_{2.5}$ Plan for failure to satisfy the requirements of CAA section 172(c)(9).

H. Major Stationary Source Control Requirements Under CAA Section 189(e)

Section 189(e) of the Act specifically requires that the control requirements applicable to major stationary sources of direct $PM_{2.5}$ also apply to major stationary sources of $PM_{2.5}$ precursors, except where the Administrator determines that such sources do not contribute significantly to $PM_{2.5}$ levels that exceed the standards in the area.[523] The control requirements applicable to major stationary sources of direct $PM_{2.5}$ in a Serious $PM_{2.5}$ nonattainment area include, at minimum, the requirements of a nonattainment new source review (NNSR) permit program meeting the requirements of CAA sections 172(c)(5)

[517] *See* 2015 $PM_{2.5}$ Plan, Chapter 6, Section 6.3, Table 6–6, Total Reductions Necessary to Reach Attainment (tpd). The ''Attainment Emissions Level'' used in Table 6–6 of the Plan reflect the projected emission inventory levels found in Appendix B Emission Inventory Tables, and does not reflect the attainment target levels identified by the CARB Staff Report, section II.B. Attainment Emission Levels, Table 1.

[518] CARB Staff Report, section II.B. Attainment Emission Levels, p. 9.

[519] 2015 $PM_{2.5}$ Plan, Chapter 6, Section 6.4.2 and CARB Staff Report, p. 27.

[520] 75 FR 68294 (November 5, 2010) and 76 FR 16696 (March 25, 2011).

[521] 76 FR 26609 at 26612–26613 (May 9, 2011).

[522] The CAA requires that emission reductions resulting from incentive programs be ''quantifiable, surplus, enforceable and permanent'' in order to qualify for emission reduction credit in a SIP. *See, e.g.,* ''Improving Air Quality with Economic Incentive Programs,'' U.S. EPA, Office of Air and Radiation, January 2001; *see also* 80 FR 19020 (April 9, 2015) (final action on SJVUAPCD Rule 9610).

[523] General Preamble at 13539 and 13541–42.

and 189(b)(3).[524] As part of our April 7, 2015 final action to reclassify the SJV area as Serious nonattainment for the 1997 $PM_{2.5}$ standards, we established a May 7, 2016 deadline for the State to submit NNSR SIP revisions addressing the requirements of CAA sections 189(b)(3) and 189(e) of the Act.[525]

California has not yet submitted the NNSR SIP revisions required to satisfy the subpart 4 requirements for Serious nonattainment areas because they are not yet due. Accordingly, we are not proposing any action with respect to these requirements at this time. CARB submitted amendments to the SJVUAPCD's NNSR rules in 2011 to address the 1997 $PM_{2.5}$ NAAQS to ensure that new and modified major sources of $PM_{2.5}$ undergo pre-construction review, and the EPA approved these NNSR SIP revisions on September 17, 2014.[526]

I. Motor Vehicle Emission Budgets

1. Requirements for Motor Vehicle Emissions Budgets

Section 176(c) of the CAA requires federal actions in nonattainment and maintenance areas to conform to the SIP's goals of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of the standards. Conformity to the SIP's goals means that such actions will not: (1) Cause or contribute to violations of a NAAQS, (2) worsen the severity of an existing violation, or (3) delay timely attainment of any NAAQS or any interim milestone.

Actions involving Federal Highway Administration (FHWA) or Federal Transit Administration (FTA) funding or approval are subject to the EPA's transportation conformity rule, codified at 40 CFR part 93, subpart A. Under this rule, metropolitan planning organizations (MPOs) in nonattainment and maintenance areas coordinate with state and local air quality and transportation agencies, EPA, FHWA, and FTA to demonstrate that an area's regional transportation plans (RTP) and transportation improvement programs (TIP) conform to the applicable SIP. This demonstration is typically done by showing that estimated emissions from existing and planned highway and transit systems are less than or equal to the motor vehicle emissions budgets (budgets) contained in all control strategy SIPs. An attainment, maintenance, or RFP SIP should include budgets for the attainment year, each required RFP milestone year, or the last year of the maintenance plan, as appropriate. Budgets are generally established for specific years and specific pollutants or precursors and must reflect all of the motor vehicle control measures contained in the attainment and RFP demonstrations.[527]

$PM_{2.5}$ plans should identify budgets for direct $PM_{2.5}$, NO_X and all other $PM_{2.5}$ precursors whose on-road emissions are determined to significantly contribute to $PM_{2.5}$ levels in the area for each RFP milestone year and the attainment year, if the plan demonstrates attainment. All direct $PM_{2.5}$ SIP budgets should include direct $PM_{2.5}$ motor vehicle emissions from tailpipes, brake wear, and tire wear. A state must also consider whether re-entrained paved and unpaved road dust or highway and transit construction dust are significant contributors and should be included in the direct $PM_{2.5}$ budget.[528]

Transportation conformity trading mechanisms are allowed under 40 CFR 93.124 where a SIP establishes appropriate mechanisms for such trades. The basis for the trading mechanism is the SIP attainment modeling which established the relative contribution of each $PM_{2.5}$ precursor pollutant.

In general, only budgets in approved SIPs can be used for transportation conformity purposes. However, section 93.118(e) of the transportation conformity rule allows budgets in a SIP submission to apply for conformity purposes before the SIP submission is approved under certain circumstances. First, there must not be any other approved SIP budgets that have been established for the same time frame, pollutant, and CAA requirement. Second, the EPA must find that the submitted SIP budgets are adequate for transportation conformity purposes. To be found adequate, the submission must meet the conformity adequacy requirements of 40 CFR 93.118(e)(4) and (5). The transportation conformity rule does, however, allow for replacement of previously approved budgets by submitted motor vehicle emissions budgets that the EPA has found adequate, if the EPA has limited the duration of its prior approval to the period before it finds replacement budgets adequate.[529]

2. Motor Vehicle Emissions Budgets in the 2015 $PM_{2.5}$ Plan

The 2015 $PM_{2.5}$ Plan includes budgets for direct $PM_{2.5}$ and NO_X for 2014 and 2017 (RFP milestone years), 2018 (projected attainment year for the 1997 24-hour NAAQS), and 2020 (projected attainment year for the 1997 annual NAAQS).[530] The budgets were calculated using EMFAC2014, CARB's latest version of the EMFAC model for estimating emissions from on-road vehicles operating in California.[531] The SJV has eight separate county-based MPOs; therefore, separate budgets are provided for each MPO as well as a total for the nonattainment area as a whole. The budgets for 2014, 2017, and 2020 reflect annual daily average emissions, and the budgets for 2018 reflect winter daily average emissions. Winter average day emissions are used for the 2018 budgets because SJV's exceedances of the $PM_{2.5}$ 24-hour NAAQS occur almost exclusively during the winter months and are linked with the District's 2018 attainment demonstration for the 24-hour $PM_{2.5}$ NAAQS. Annual average day emissions are used for the 2014 and 2017 budgets because the District has determined that annual average day budgets are the more protective of the two budgets options (*i.e.,* annual versus 24-hour NAAQS) for the RFP milestone years when both standards apply, as is the case for the 2015 $PM_{2.5}$ Plan. Annual average day emissions are used for the 2020 budgets because those emissions are linked with the District's attainment demonstration for the annual $PM_{2.5}$ NAAQS.

The direct $PM_{2.5}$ budgets include tailpipe, brake wear, and tire wear emissions but exclude paved road, unpaved road, and road construction dust based on the District's conclusion that these source categories are insignificant contributors to $PM_{2.5}$ levels in the SJV.[532] The Plan does not include budgets for SO_2, VOC, and ammonia. Under 40 CFR 93.102(b)(2)(v), the State

[524] CAA section 189(b)(1) (requiring that Serious area plans include provisions submitted to meet the requirements for Moderate areas in section 189(a)(1)).

[525] 80 FR 18528 at 18533 (April 7, 2015).

[526] 79 FR 55637 (September 17, 2014).

[527] 40 CFR 93.118(e)(4)(v).

[528] 40 CFR 93.102(b) and 93.122(f); *see also* conformity rule preamble at 69 FR 40004, 40031–40036 (July 1, 2004).

[529] 40 CFR 93.118(e)(1).

[530] 2015 $PM_{2.5}$ Plan, Chapter 6, Section 6.5.4 (for 2014, 2017, and 2020 budgets) and *2018 Transportation Conformity Budgets for the San Joaquin Valley $PM_{2.5}$ SIP Plan Supplement,''* dated June 19, 2015, and adopted by ARB Board on July 23, 2015, p. 4.

[531] EMFAC is short for *EM*ission *FAC*tor. EPA announced the availability of the EMFAC2014 model for use in state implementation plan development and transportation conformity in California on December 14, 2015. EPA's approval of the EMFAC2014 emissions model for SIP and conformity purposes was effective on the date of publication of the notice in the **Federal Register**. EMFAC2014 must be used for all new regional emissions analyses and CO, PM_{10} and $PM_{2.5}$ hot-spot analyses that are started on or after December 14, 2017, which is the end of the grace period for EMFAC2014.

[532] Plan at Chapter 6, Section 6.5.3.

is not required to include budgets for VOC, sulfur dioxide (SO_2) and/or ammonia (NH3) unless EPA or the State has made a finding that transportation-related emissions of any of these precursors within the nonattainment area are a significant contributor to the $PM_{2.5}$ nonattainment problem. The District considered on-road SO_2, VOC, and ammonia emissions and concluded that it is not necessary to control on-road SO_2, VOC, and ammonia emissions to attain the NAAQS. The District states in the Plan that on-road mobile exhaust estimates of SO_X are less than 1 ton per day Valley-wide in the budget years; VOC emissions do not contribute significantly to the formation of secondary $PM_{2.5}$ in the SJV; and on-road mobile exhaust estimates of ammonia are less than 1 ton per day Valley-wide in the budget years.[533]

TABLE 13—MVEBS FOR THE SAN JOAQUIN VALLEY FOR 1997 $PM_{2.5}$ STANDARD

County	2014		2017		2018		2020	
	Annual average, tpd		Annual average, tpd		Winter average, tpd		Annual average, tpd	
	$PM_{2.5}$	NO_X	$PM_{2.5}$	NO_X	$PM_{2.5}$	NO_X	$PM_{2.5}$	NO_X
Fresno	1.2	41.2	1.0	31.2	0.9	29.9	0.9	25.3
Kern (SJV)	1.0	36.5	0.8	28.0	0.8	27.7	0.8	23.3
Kings	0.2	7.6	0.2	5.7	0.1	5.5	0.1	4.8
Madera	0.2	7.8	0.2	5.8	0.2	5.5	0.2	4.7
Merced	0.4	13.9	0.3	10.7	0.3	10.3	0.3	8.9
San Joaquin	0.7	19.6	0.6	14.9	0.6	14.4	0.6	11.9
Stanislaus	0.5	15.6	0.4	11.9	0.4	11.4	0.4	9.6
Tulare	0.5	14.9	0.4	11.9	0.4	10.3	0.4	9.6
Totals [a]	4.8	157.0	3.8	119.0	3.6	115.0	3.5	96.8

Sources: 2015 $PM_{2.5}$ Plan, Chapter 6, p. 6–16; and *Transportation Conformity Budgets for the San Joaquin Valley $PM_{2.5}$ SIP, Plan Supplement,* dated June 19, 2015, and adopted by ARB Board on July 23, 2015.

[a] Totals reflect disaggregated emissions and may not add exactly as shown here due to rounding.

The 2015 $PM_{2.5}$ Plan also includes a proposed trading mechanism for transportation conformity analyses that would allow future decreases in NO_X emissions from on-road mobile sources to offset any on-road increases in $PM_{2.5}$, using a NO_X to $PM_{2.5}$ ratio of 9:1.[534] The State is proposing to use the same 9:1 ratio that was in the 2008 $PM_{2.5}$ Plan and approved by the EPA.[535]

Using the same Community Multiscale Air Quality modeling application [536] underlying the attainment demonstrations in the prior SJV 2008 $PM_{2.5}$ Plan and the current 2015 $PM_{2.5}$ Plan, CARB previously developed an equivalency ratio between emission reductions of direct $PM_{2.5}$ and of NO_X. For each pollutant, CARB modeled the ambient effect of a 10% reduction of emissions over the modeling domain. The concentration change per emission change gave a precursor effectiveness value for NO_X and an effectiveness value for direct $PM_{2.5}$. The ratio of these two effectiveness values provided the NO_X:$PM_{2.5}$ trading ratio.

To ensure that the trading mechanism does not affect the ability of the SJV to meet the NO_X budget, the NO_X emission reductions available to supplement the $PM_{2.5}$ budget would only be those remaining after the NO_X budget has been met. Each MPO responsible for demonstrating transportation conformity must clearly document the calculations used in the trading, along with any additional reductions of NO_X or $PM_{2.5}$ emissions in the conformity analysis.

3. Evaluation and Proposed Actions

We have evaluated the budgets against our adequacy criteria in 40 CFR 93.118(e)(4) and (5) as part of our review of the budgets' approvability (*see* section V in the EPA's General TSD for this proposal) and will complete the adequacy review of these budgets concurrent with our final action on the 2015 $PM_{2.5}$ Plan.[537] On September 18, 2015, the EPA announced the availability of the 2015 $PM_{2.5}$ Plan with MVEBs and a 30-day public comment period. This announcement was posted on EPA's Adequacy Web site at: *http://www.epa.gov/otaq/stateresources/transconf/reg9sips.htm#ca.* The comment period for this notification ended on October 19, 2015.

Based on the information about re-entrained road dust in the Plan and in accordance with 40 CFR 93.102(b)(3), we propose to concur with the District's finding that re-entrained road dust emissions from paved roads, unpaved roads, and road construction are not significant contributors to the $PM_{2.5}$ nonattainment problem in the Valley and that these emissions therefore do not need to be addressed in the MVEBs (*see* discussion in section V.A.2 of this proposed rule). Additionally, based on the information about VOC, SO_2, and ammonia emissions in the Plan and in accordance with 40 CFR 93.102(b)(2)(v), we propose to find that it is not necessary to establish motor vehicle emissions budgets for transportation-related emissions of VOC, SO_2, and ammonia to attain the 1997 $PM_{2.5}$ standards in the SJV.

For the reasons discussed in section V.E.2 of this proposed rule, we are proposing to approve the State's demonstration that it is impracticable to attain the 1997 $PM_{2.5}$ NAAQS in the SJV by the applicable Serious area attainment date of December 15, 2015 and proposing to extend the attainment dates to December 31, 2018 and December 31, 2020 for the 24-hour and annual NAAQS, respectively.

For the reasons discussed in sections V.E.v and V.F of this proposed rule, we are proposing to approve the RFP and attainment demonstrations in the 2015 $PM_{2.5}$ Plan. The budgets, as given in

[533] *Id.*

[534] 2015 $PM_{2.5}$ Plan, Chapter 6, p. 6–17.

[535] 76 FR 69896 (November 9, 2011).

[536] The EPA approved this air quality modeling as part of its approval of the attainment demonstration in the SJV $PM_{2.5}$ Plan. *See* 76 FR 41338, 41349 and 76 FR 69896, 69924.

[537] Under the Transportation Conformity regulations, the EPA may review the adequacy of submitted motor vehicle emission budgets simultaneously with the EPA's approval or disapproval of the submitted implementation plan. 40 CFR 93.118(f)(2).

Table 13 of this proposed rule, are consistent with these demonstrations, are clearly identified and precisely quantified, and meet all other applicable statutory and regulatory requirements including the adequacy criteria in 93.118(e)(4) and (5). For these reasons, the EPA proposes to approve the budgets listed in Table 13 above. We provide a more detailed discussion in section V of the EPA's General TSD, which can be found in the docket for today's action.

CARB has requested that we limit the duration our approval of the budgets only until the effective date of the EPA's adequacy finding for any subsequently submitted budgets.[538] The transportation conformity rule allows us to limit the approval of budgets.[539] However, we will consider a state's request to limit an approval of its MVEB only if the request includes the following elements: [540]

- An acknowledgement and explanation as to why the budgets under consideration have become outdated or deficient;
- A commitment to update the budgets as part of a comprehensive SIP update; and
- A request that the EPA limit the duration of its approval to the time when new budgets have been found to be adequate for transportation conformity purposes.

Because CARB's request does not include all of these elements, we cannot at this time propose to limit the duration of our approval of the submitted budgets until new budgets have been found adequate. In order to limit the approval, we would need the information described above in order to determine whether such limitation is reasonable and appropriate in this case. Once CARB has adequately addressed that information, we intend to review it and take appropriate action. If we propose to limit the duration of our approval of the MVEB in the 2015 $PM_{2.5}$ Plan, we will provide the public an opportunity to comment. The duration of the approval of the budgets, however, would not be limited until we complete such a rulemaking.

We have previously approved motor vehicle emissions budgets for the 1997 annual and 24-hour $PM_{2.5}$ NAAQS.[541] These budgets will continue to apply for the 1997 $PM_{2.5}$ NAAQS in the SJV area until we finalize our approval of the budgets in the 2015 $PM_{2.5}$ Plan or find them adequate.

As noted above, the State included a trading mechanism to be used in transportation conformity analyses that would use the proposed budgets in the 2015 $PM_{2.5}$ Plan as allowed for under 40 CFR 93.124. This trading mechanism would allow future decreases in NO_X emissions from on-road mobile sources to offset any on-road increases in $PM_{2.5}$, using a NO_X for $PM_{2.5}$ ratio of 9:1. To ensure that the trading mechanism does not affect the ability to meet the NO_X budget, the Plan provides that the NO_X emission reductions available to supplement the $PM_{2.5}$ budget would only be those remaining after the NO_X budget has been met. The Plan also provides that each MPO responsible for demonstrating transportation conformity shall clearly document the calculations used in the trading, along with any additional reductions of NO_X or $PM_{2.5}$ emissions in the conformity analysis.

The EPA has reviewed the trading mechanism as described on page 6–17 in section 6.5.5 of Chapter 6 the 2015 $PM_{2.5}$ Plan and finds it is appropriate for transportation conformity purposes in the San Joaquin Valley for the 1997 $PM_{2.5}$ NAAQS. We note that the 9:1 NO_X for $PM_{2.5}$ ratio the State is proposing to use for transportation conformity purposes in the 2015 Plan is the same as previously approved by EPA in its action on the SJV 2008 $PM_{2.5}$ Plan.[542] We therefore propose to approve the trading mechanism with a NO_X for $PM_{2.5}$ trading ratio of 9:1 as enforceable components of the transportation conformity program for the SJV for the 1997 $PM_{2.5}$ NAAQS. For further discussion of our evaluation of the 9:1 NO_X for $PM_{2.5}$ trading ratio for purposes of the Plan's motor vehicle emission budgets, please *see* section IV.B of the EPA's Interpollutant Trading Ratios TSD.

VI. Summary of Proposed Actions and Request for Public Comment

Under CAA sections 110(k)(3) and 110(k)(4), the EPA is proposing to approve, conditionally approve, and disapprove SIP revisions submitted by California to address the Act's Serious area planning requirements for the 1997 $PM_{2.5}$ NAAQS in the San Joaquin Valley nonattainment area. Specifically, the EPA is proposing to approve the following elements of the 2015 $PM_{2.5}$ Plan:

1. The 2012 base year emissions inventories as meeting the requirements of CAA section 172(c)(3);
2. the best available control measures/best available control technology demonstration as meeting the requirements for RACM/RACT and BACM/BACT in CAA sections 172(c)(1), 189(a)(1)(C), and 189(b)(1)(B);
3. the attainment demonstration as meeting the requirements of CAA sections 172(c)(1) and 189(b)(1)(A);
4. the reasonable further progress demonstration as meeting the requirements of CAA section 172(c)(2);
5. the State's application for an extension of the Serious area attainment date to December 31, 2018 for the 1997 24-hour $PM_{2.5}$ NAAQS and to December 31, 2020 for the 1997 annual $PM_{2.5}$ NAAQS, as meeting the requirements of CAA section 188(e);
6. the District's commitment to amend and implement revisions to Rule 4692 (''Commercial Charbroiling'') for under-fired charbroilers in accordance with the schedule provided on page 7–6 of the 2015 $PM_{2.5}$ Plan to achieve the emissions reductions identified therein, as adopted in SJVUAPCD Governing Board Resolution 15–4–7A; and
7. the 2014, 2017, 2018, and 2020 motor vehicle emissions budgets, as shown in Table 13 of this proposed rule, because they are derived from approvable attainment and RFP demonstrations and meet the requirements of CAA section 176(c) and 40 CFR part 93, subpart A.

EPA is also proposing to approve the interpollutant trading mechanism provided in the 2015 $PM_{2.5}$ Plan for use in transportation conformity analyses, in accordance with 40 CFR 93.124, with the condition that trades are limited to substituting excess reductions in NO_X emissions for direct $PM_{2.5}$ emission reductions.

Under CAA section 110(k)(4), the EPA is proposing to conditionally approve the quantitative milestones identified in the 2015 $PM_{2.5}$ Plan because they do not fully satisfy the requirement for quantitative milestones in section 189(c) of the Act. Section 110(k)(4) authorizes the EPA to conditionally approve a plan revision based on a commitment by the State to adopt specific enforceable measures by a date certain but not later than one year after the date of the plan approval. In this instance, the enforceable measures that the State must submit are enforceable quantitative milestones that enable the EPA to determine whether the area is meeting its reasonable further progress goals as contemplated in the attainment plan and, if the area is not doing so, that enable the EPA to require the State to

[538] Letter, Richard W. Corey, Executive Officer, California Air Resources Board, to Jared Blumenfeld, Regional Administrator, EPA Region 9, June 25, 2015.

[539] 40 CFR 93.118(e)(1).

[540] 67 FR 69141 (November 15, 2002), limiting our prior approval of MVEB in certain California SIPs.

[541] 76 FR 69896, 69923 (November 9, 2011).

[542] 76 FR 69896 (November 9, 2011).

submit plan revisions to correct the deficiency. On December 15, 2015, CARB submitted a letter committing to submit a SIP revision containing specific quantitative milestones no later than December 31, 2016. If we finalize this proposed conditional approval, CARB must adopt and submit the SIP revisions it has committed to submit by December 31, 2016. If CARB fails to comply with this commitment, this conditional approval will convert to a disapproval and start an 18-month clock for sanctions under CAA section 179(a)(2) and a two-year clock for a federal implementation plan (FIP) under CAA section 110(c)(1).

Finally, under CAA section 110(k)(3), the EPA is proposing to disapprove the contingency measure portion of the 2015 $PM_{2.5}$ Plan because it does not fully satisfy the requirement for contingency measures in section 172(c)(9) of the Act. If we finalize the proposed disapproval, the offset sanction in CAA section 179(b)(2) would apply in the SJV $PM_{2.5}$ nonattainment area 18 months after the effective date of final disapproval and the highway funding sanctions in CAA section 179(b)(1) would apply in the area 6 months after the offset sanction is imposed. Neither sanction would apply if California submits and the EPA approves, prior to the implementation of the sanctions, SIP revisions that correct the deficiencies identified in the EPA's final action. Additionally, the disapproval action would trigger an obligation on the EPA to promulgate a federal implementation plan unless California corrects the deficiencies, and the EPA approves the related plan revisions, within two years of the final action.

We will accept comments from the public on these proposals for the next 30 days. The deadline and instructions for submission of comments are provided in the ''Date'' and ''Addresses'' sections at the beginning of this preamble.

VII. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at *http://www2.epa.gov/laws-regulations/laws-and-executive-orders.*

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is not a significant regulatory action and was therefore not submitted to the Office of Management and Budget (OMB) for review.

B. Paperwork Reduction Act (PRA)

This action does not impose an information collection burden under the PRA because this action does not impose additional requirements beyond those imposed by state law.

C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. This action will not impose any requirements on small entities beyond those imposed by state law.

D. Unfunded Mandates Reform Act (UMRA)

This action does not contain any unfunded mandate as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. This action does not impose additional requirements beyond those imposed by state law. Accordingly, no additional costs to State, local, or tribal governments, or to the private sector, will result from this action.

E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

F. Executive Order 13175: Coordination With Indian Tribal Governments

This action does not have tribal implications, as specified in Executive Order 13175, because the SIP is not approved to apply on any Indian reservation land or in any other area where the EPA or an Indian tribe has demonstrated that a tribe has jurisdiction, and will not impose substantial direct costs on tribal governments or preempt tribal law. Thus, Executive Order 13175 does not apply to this action.

G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of ''covered regulatory action'' in section 2–202 of the Executive Order. This action is not subject to Executive Order 13045 because it does not impose additional requirements beyond those imposed by state law.

H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

This action is not subject to Executive Order 13211, because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act (NTTAA)

Section 12(d) of the NTTAA directs the EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. The EPA believes that this action is not subject to the requirements of section 12(d) of the NTTAA because application of those requirements would be inconsistent with the CAA.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Population

The EPA lacks the discretionary authority to address environmental justice in this rulemaking.

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Ammonia, Incorporation by reference, Intergovernmental relations, Nitrogen dioxide, Particulate matter, Reporting and recordkeeping requirements, Sulfur dioxide, Volatile organic compounds.

Authority: 42 U.S.C. 7401 *et seq.*

Dated: January 28, 2016.

Jared Blumenfeld,

Regional Administrator, Region 9.

[FR Doc. 2016–02325 Filed 2–8–16; 8:45 am]

BILLING CODE 6560–50–P