ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA–R09–OAR–2019–0318; FRL–10006–40–Region 9]

Clean Air Plans; 2006 Fine Particulate Matter Nonattainment Area Requirements; San Joaquin Valley, California

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA or ''Agency'') proposes to approve portions of two state implementation plan (SIP) revisions submitted by the State of California to meet Clean Air Act (CAA or ''Act'') requirements for the 2006 fine particulate matter ($PM_{2.5}$) national ambient air quality standards (NAAQS or ''standards'') in the San Joaquin Valley (SJV) Serious nonattainment area. Specifically, the EPA proposes to approve those portions of the ''2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards'' and the ''San Joaquin Valley Supplement to the 2016 State Strategy for the State Implementation Plan'' that pertain to the 2006 $PM_{2.5}$ NAAQS and address CAA requirements for Serious $PM_{2.5}$ nonattainment areas. The EPA also proposes to approve inter-pollutant trading ratios for use in transportation conformity analyses for the 2006 $PM_{2.5}$ NAAQS. As part of this action, the EPA proposes to grant an extension of the Serious area attainment date for the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley from December 31, 2019, to December 31, 2024 based on a proposed determination that the State has satisfied the statutory criteria for this extension. We may, however, reconsider this proposal or deny California's request for extension of the attainment date if, based on new information or public comments, we find that the State has not satisfied the statutory criteria for this extension.

DATES: Any comments must arrive by April 27, 2020.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA–R09–OAR–2019–0318, at *https://www.regulations.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*. 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 *https://www.epa.gov/dockets/commenting-epa-dockets.*

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

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

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I. Background

On October 17, 2006, the EPA strengthened the 24-hour (daily) NAAQS for particles less than or equal to 2.5 micrometers (μm) in diameter ($PM_{2.5}$) by lowering the level from 65 micrograms (μg) per cubic meter (m^3) to 35 $\mu g/m^3$.[1] The 24-hour standards are based on a three-year average of 98th percentile 24-hour $PM_{2.5}$ concentrations. 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, and 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 CAA section 107(d) to designate areas throughout the nation as attaining or not attaining the NAAQS. Effective December 14, 2009, the EPA finalized initial air quality designations for the 2006 $PM_{2.5}$ NAAQS, using air quality monitoring data for the three-year periods of 2005–2007 and 2006–2008.[4] The EPA designated the San Joaquin Valley as a nonattainment area for the 2006 $PM_{2.5}$ NAAQS.[5] On June 2, 2014, the EPA classified the San Joaquin Valley as a Moderate nonattainment area for these NAAQS, thereby establishing December 31, 2015 as the

[1] 71 **Federal Register** (FR) 61144 (October 17, 2006) and 40 CFR 50.13. In promulgating the 2006 $PM_{2.5}$ NAAQS, the EPA retained the level of the 1997 annual average $PM_{2.5}$ NAAQS of 15.0 $\mu g/m^3$. 62 FR 36852 (July 18, 1997) and 40 CFR 50.7. Subsequently, the EPA strengthened the primary annual $PM_{2.5}$ NAAQS by lowering the level to 12.0 $\mu g/m^3$ while retaining the secondary annual $PM_{2.5}$ NAAQS at the level of 15.0 $\mu g/m^3$. 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 2006 24-hour standards (35 $\mu g/m^3$) as codified in 40 CFR 50.13.

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

[3] 81 FR 58010, 58011 (August 24, 2016).

[4] 74 FR 58688 (November 13, 2009).

[5] Id. (codified at 40 CFR 81.305). The most recent 24-hour design value (2016–2018) for the San Joaquin Valley is 65 $\mu g/m^3$. EPA design value workbook dated July 18, 2019, worksheet ''Table 1b.''

latest permissible attainment date for the area under section 188(c)(1) of the CAA.[6] Effective February 19, 2016, the EPA reclassified the San Joaquin Valley as a Serious nonattainment area for these NAAQS.[7] Shortly thereafter, the EPA approved the State's demonstration that it was impracticable to attain the 2006 $PM_{2.5}$ NAAQS by the December 31, 2015 Moderate area attainment date and related plan elements addressing the Moderate area requirements for the 2006 $PM_{2.5}$ NAAQS.[8]

Upon reclassification as a Serious $PM_{2.5}$ nonattainment area, the San Joaquin Valley became subject to a new statutory attainment date no later than the end of the tenth calendar year following designation (*i.e.,* December 31, 2019) and the requirement to submit a Serious area plan satisfying the requirements of CAA Title I, part D, including the requirements of subpart 4, for the 2006 $PM_{2.5}$ NAAQS.[9] As explained in the EPA's final reclassification action, the Serious area plan for the San Joaquin Valley must include, among other things, provisions to assure that, under CAA section 189(b)(1)(B), 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 four years after the area is reclassified and a demonstration (including air quality modeling) that the plan provides for attainment as expeditiously as practicable and no later than the applicable attainment date. The EPA established an August 21, 2017 deadline for California to adopt and submit a SIP submission addressing the Serious nonattainment area requirements for the 2006 $PM_{2.5}$ NAAQS.[10] The EPA also noted that California may choose to submit a request for an extension of the December 31, 2019, Serious area attainment date pursuant to CAA section 188(e) simultaneously with its submission of a Serious area plan for the area.[11]

As described further in section III.B of this preamble, CAA section 188(e) allows the EPA to extend the attainment date for a Serious area by up to five years if attainment by the Serious area attainment date is impracticable. However, before the Agency 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 2019,

(2) demonstrate that attainment by 2019 is impracticable,

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

(4) demonstrate to the Administrator's 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.

The San Joaquin Valley $PM_{2.5}$ 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.[12] The area is home to four 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 San Joaquin Valley 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.

On November 16, 2018, CARB submitted to the EPA substantial portions of the Serious area plan for the 2006 $PM_{2.5}$ NAAQS following CARB's adoption of one component of the plan on October 25, 2018 and the SJVUAPCD's adoption of a second component of it on November 15, 2018.[13] Because CARB had not yet adopted this submission in its entirety, the EPA determined that it did not meet the EPA's completeness requirements for SIP submissions under 40 CFR part 51, Appendix V, section 2.1.[14] The EPA's incompleteness findings became effective on January 7, 2019, and triggered clocks for the application of emissions offset sanctions for new or modified major stationary sources in the San Joaquin Valley 18 months after the effective date of the findings and highway funding sanctions six months thereafter, unless the EPA affirmatively determines that the State has submitted a complete SIP addressing the deficiency that was the basis for these findings, consistent with CAA section 179(b) and the EPA's sanctions sequencing rule in 40 CFR 52.31.[15] These findings also triggered the obligation under CAA section 110(c) on the EPA to promulgate a federal implementation plan no later than two years after the effective date of the findings, unless the State has submitted, and the EPA has approved, the required SIP submittal.[16]

II. Summary and Completeness Review of the San Joaquin Valley $PM_{2.5}$ Plan

The EPA is proposing action on portions of two SIP revisions submitted by CARB to meet the Serious nonattainment area requirements for the 2006 24-hour $PM_{2.5}$ NAAQS in the San Joaquin Valley. Specifically, the EPA is proposing to act on those portions of the following two plan submissions that pertain to the 2006 24-hour $PM_{2.5}$ NAAQS: The ''2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards,'' adopted by the SJVUAPCD on November 15, 2018, and by CARB on January 24, 2019 (''2018 $PM_{2.5}$ Plan'')[17]; and the ''San Joaquin Valley Supplement to the 2016 State Strategy for the State Implementation Plan,'' adopted by CARB on October 25, 2018 (''Valley State SIP Strategy''). We refer to the relevant portions of these SIP submissions collectively as the ''SJV $PM_{2.5}$ Plan'' or ''Plan.'' The SJV $PM_{2.5}$ Plan addresses the Serious area attainment plan requirements for the 2006 24-hour $PM_{2.5}$ NAAQS in the San Joaquin Valley and includes a request under CAA section 188(e) for an extension of the Serious area attainment date for the area for this NAAQS. CARB submitted the SJV $PM_{2.5}$ Plan to the EPA

[6] 79 FR 31566 (June 2, 2014). The EPA promulgated these $PM_{2.5}$ nonattainment area classifications in response to a 2013 decision of the Court of Appeals for the D.C. Circuit remanding the EPA's prior implementation rule for the $PM_{2.5}$ NAAQS and directing the EPA to repromulgate implementation rules pursuant to subpart 4 of part D, title I of the Act. *Natural Resources Defense Council* v. *EPA,* 706 F.3d 428 (D.C. Cir. 2013).

[7] 81 FR 2993 (January 20, 2016).

[8] 81 FR 59876 (August 31, 2016).

[9] 81 FR 2993, 2998.

[10] Id. at 3000 and 81 FR 42263 (June 29, 2016) (codified at 40 CFR 52.247(f)).

[11] 81 FR 2993, 2998.

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

[13] Letter dated November 16, 2018, from Kurt Karperos, Deputy Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region IX.

[14] 83 FR 62720 (December 6, 2018). The EPA made these findings in response to a court order issued in *Committee for a Better Arvin, et al.,* v. *Andrew Wheeler, et al.,* Case No. 18–cv–05700–RS (N.D. Cal., October 24, 2018).

[15] 83 FR 62720, 62723.

[16] Id.

[17] The 2018 $PM_{2.5}$ Plan was developed jointly by CARB and the District.

as a revision to the SIP on May 10, 2019.[18]

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 that an opportunity for a public hearing was provided consistent with the EPA's implementing regulations in 40 CFR 51.102.

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.

A. 2018 $PM_{2.5}$ Plan

The following portions of the 2018 $PM_{2.5}$ Plan and related support documents address the Serious area requirements for the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley: (i) Chapter 4 (''Attainment Strategy for $PM_{2.5}$''); (ii) Chapter 6 (''Demonstration of Federal Requirements for the 2006 $PM_{2.5}$ Standard: Serious Plan and Extension Request''); [19] (iii) numerous appendices to the 2018 $PM_{2.5}$ Plan; (iv) CARB's ''Staff Report, Review of the San Joaquin Valley 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards,'' release date December 21, 2018 (''CARB Staff Report''); [20] and (v) the State's and District's board resolutions adopting the 2018 $PM_{2.5}$ Plan (CARB Resolution 19–1 and SJVUAPCD Governing Board Resolution 18–11–16).[21] The SJVUAPCD Governing Board Resolution 18–11–16 includes emission reduction commitments on which the SJV $PM_{2.5}$ Plan relies.[22]

The appendices to the 2018 $PM_{2.5}$ Plan, in order of their evaluation in this preamble, include: (i) App. B (''Emissions Inventory''); (ii) App. A (''Ambient $PM_{2.5}$ Data Analysis''); (iii) a plan precursor demonstration and clarifications, including App. G (''Precursor Demonstration'') and Attachment A (''Clarifying information for the San Joaquin Valley 2018 Plan regarding model sensitivity related to ammonia and ammonia controls'') to the CARB Staff Report; (iv) control strategy appendices, including App. C (''Stationary Source Control Measure Analyses''), App. D (''Mobile Source Control Measures Analyses''), and App. E (''Incentive-Based Strategy''); (v) modeling appendices, including App. J (''Modeling Emission Inventory''), App. K (''Modeling Attainment Demonstration''), and App. L (''Modeling Protocol''); (vi) App. H (''RFP, Quantitative Milestones, and Contingency''); and (vii) App. I (''New Source Review and Emission Reduction Credits''). The 2018 $PM_{2.5}$ Plan addresses motor vehicle emission budget (MVEB) requirements in the ''Transportation Conformity'' section of App. D (pages D–119 to D–131). The 2018 $PM_{2.5}$ Plan also includes an Executive Summary, Introduction (Ch. 1), chapters on ''Air Quality Challenges and Trends'' (Ch. 2) and ''Health Impacts and Health Risk Reduction Strategy'' (Ch. 3), and an appendix on ''Public Education and Technology Advancement'' (App. F).

The District provided public notice and opportunity for public comment prior to its November 15, 2018 public hearing on and adoption of the 2018 $PM_{2.5}$ Plan.[23] CARB also provided public notice and opportunity for public comment prior to its January 24, 2019 public hearing on and adoption of the 2018 $PM_{2.5}$ Plan.[24] The SIP submission includes proof of publication of notices for the respective public hearings. It also includes copies of the written and oral comments received during the State's and District's public review processes and the agencies' responses thereto.[25] Therefore, we find that the 2018 $PM_{2.5}$ Plan meets the procedural requirements for public notice and hearing in CAA sections 110(a) and 110(l) and 40 CFR 51.102. The 2018 $PM_{2.5}$ Plan became complete by operation of law on November 10, 2019. The sanctions clocks that were triggered by our December 6, 2018 findings that the State had failed to submit complete SIP submissions addressing the statutory requirements that apply to areas designated nonattainment for the $PM_{2.5}$ NAAQS, however, will continue to run until the EPA affirmatively determines, by letter to the Governor of California, that CARB has submitted a complete SIP submission addressing the identified deficiencies.[26]

B. Valley State SIP Strategy

CARB developed the ''Revised Proposed 2016 State Strategy for the State Implementation Plan'' (''2016 State Strategy'') to support attainment planning in the San Joaquin Valley and Los Angeles-South Coast Air Basin (''South Coast'') ozone nonattainment areas.[27] In its resolution adopting the 2016 State Strategy (CARB Resolution 17–7), the Board found that the 2016 State Strategy would achieve 6 tons per day (tpd) of NO_X emission reductions and 0.1 tpd of direct $PM_{2.5}$ emission reductions in the San Joaquin Valley by 2025 and directed CARB staff to work with the SJVUAPCD to identify additional reductions from sources under District regulatory authority as part of a comprehensive plan to attain the $PM_{2.5}$ standards for the San Joaquin Valley and to return to the Board with a commitment to achieve additional emission reductions from mobile sources.[28]

[18] Letter dated May 9, 2019, from Richard Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region 9. The EPA is not, at this time, proposing to act on those portions of the ''2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards'' or the ''San Joaquin Valley Supplement to the 2016 State Strategy for the State Implementation Plan'' that pertain to the 1997 $PM_{2.5}$ NAAQS, the 2012 $PM_{2.5}$ NAAQS, or Serious area contingency measures. We intend to act on these portions of the submitted SIP revisions in subsequent rulemakings.

[19] Chapter 5 (''Demonstration of Federal Requirements for the 1997 $PM_{2.5}$ Standard'') and Chapter 7 (''Demonstration of Federal Requirements for the 2012 $PM_{2.5}$ Standard'') of the 2018 $PM_{2.5}$ Plan pertain to the 1997 $PM_{2.5}$ NAAQS and 2012 $PM_{2.5}$ NAAQS, respectively. The EPA intends to act on these portions of the 2018 $PM_{2.5}$ Plan in separate rulemakings.

[20] The CARB Staff Report includes CARB's review of, among other things, the 2018 $PM_{2.5}$ Plan's control strategy and attainment demonstration. Letter dated December 11, 2019 from Richard Corey, Executive Officer, CARB to Mike Stoker, Regional Administrator, EPA Region IX, transmitting the CARB Staff Report [on the 2018 $PM_{2.5}$ Plan].

[21] CARB Resolution 19–1, ''2018 $PM_{2.5}$ State Implementation Plan for the San Joaquin Valley,'' January 24, 2019, and SJVUAPCD Governing Board Resolution 18–11–16, ''Adopting the [SJVUAPCD] 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards,'' November 15, 2018.

[22] SJVUAPCD Governing Board Resolution 18–11–16, paragraph 6, 10–11.

[23] SJVUAPCD, ''Notice of Public Hearing for Adoption of Proposed 2018 $PM_{2.5}$ Plan for the 1997, 2006, and 2012 Standards,'' October 16, 2018, and SJVUAPCD Governing Board Resolution 18–11–16.

[24] CARB, ''Notice of Public Meeting to Consider the 2018 $PM_{2.5}$ State Implementation Plan for the San Joaquin Valley,'' December 21, 2018, and CARB Resolution 19–1.

[25] CARB, ''Board Meeting Comments Log,'' March 29, 2019; J&K Court Reporting, LLC, ''Meeting, State of California Air Resources Board,'' January 24, 2019 (transcript of CARB's public hearing), and 2018 $PM_{2.5}$ Plan, App. M (''Summary of Significant Comments and Responses'').

[26] 83 FR 62720 (citing required process for termination of sanctions clocks in 40 CFR 52.31(d)(5)).

[27] The EPA has approved certain commitments made by CARB in the 2016 State Strategy for purposes of attaining the ozone NAAQS in the San Joaquin Valley and South Coast ozone nonattainment areas. See, *e.g.,* 84 FR 3302 (February 12, 2019) and 84 FR 52005 (October 1, 2019).

[28] CARB Resolution 17–7, ''2016 State Strategy for the State Implementation Plan,'' March 23, 2017, 6–7.

CARB responded to this resolution by developing and adopting the ''San Joaquin Valley Supplement to the 2016 State Strategy for the State Implementation Plan'' (''Valley State SIP Strategy'') to support the 2018 $PM_{2.5}$ Plan. The State's May 10, 2019 SIP submission incorporates by reference the Valley State SIP Strategy as adopted by CARB on October 25, 2018 and submitted to the EPA on November 16, 2018.[29]

The Valley State SIP Strategy includes an Introduction (Ch. 1), a chapter on ''Measures'' (Ch. 2), and a ''Supplemental State Commitment from the Proposed State Measures for the Valley'' (Ch. 3). Much of the content of the Valley State SIP Strategy is reproduced in Chapter 4 (''Attainment Strategy for $PM_{2.5}$'') of the 2018 $PM_{2.5}$ Plan.[30] The Valley State SIP Strategy also includes CARB Resolution 18–49, which, among other things, commits CARB to achieve specific amounts of NO_X and $PM_{2.5}$ emission reductions by specific years, for purposes of attaining the $PM_{2.5}$ NAAQS in the San Joaquin Valley.[31]

CARB provided the required public notice and opportunity for public comment prior to its October 25, 2018 public hearing on and adoption of the Valley State SIP Strategy.[32] The SIP submission includes proof of publication of the public notice for this public hearing. It also includes copies of the written and oral comments received during the State's public review process and CARB's responses thereto.[33] Therefore, we find that the Valley State SIP Strategy meets the procedural requirements for public notice and hearing in CAA sections 110(a) and 110(l) and 40 CFR 51.102.

The Valley State SIP Strategy became complete by operation of law on November 10, 2019. The sanctions clocks that were triggered by our December 6, 2018 findings that the State had failed to submit complete SIP submissions addressing the statutory requirements that apply to areas designated nonattainment for the $PM_{2.5}$ NAAQS, however, will continue to run until the EPA affirmatively determines, by letter to the Governor of California, that CARB has submitted a complete SIP submission addressing the identified deficiencies.[34]

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

A. Requirements for $PM_{2.5}$ Serious Area Plans

Upon reclassification of a Moderate nonattainment area as a Serious nonattainment area under subpart 4 of part D, title I of the CAA, the Act requires the state to make a SIP submission that addresses the following Serious nonattainment area requirements: [35]

(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 four 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 the end of the tenth calendar year after designation as a nonattainment area (*i.e.,* December 31, 2019, for the San Joaquin Valley for the 2006 $PM_{2.5}$ NAAQS), or where the state is seeking an extension of the attainment date under section 188(e), a demonstration that attainment by such date is impracticable and that the plan provides for attainment by the most expeditious alternative date practicable that is no more than five years later (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 three 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'' [36] thresholds from 100 tons per year (tpy) to 70 tpy (CAA section 189(b)(3)).

Serious area plans must also satisfy the requirements for Moderate area plans in CAA section 189(a), to the extent the state has not already met those requirements in the Moderate area plan submitted for the area. In addition, the Serious area plan must meet the general requirements applicable to all SIP submissions under section 110 of the CAA, including 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'' (''General Preamble''); [37] (2) ''State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990; Supplemental'' (''General Preamble Supplement''); [38] 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'' (''General Preamble Addendum'').[39]

[29] Letter dated May 9, 2019, from Richard Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region 9, 2.

[30] For example, Table 2 (proposed mobile source measures and schedule), Table 3 (emissions reductions from proposed mobile source measures), and Table 4 (summary of emission reduction measures) of the Valley State SIP Strategy correspond to Tables 4–8, 4–9, and 4–7, respectively, of the 2018 $PM_{2.5}$ Plan, Chapter 4.

[31] CARB Resolution 18–49, ''San Joaquin Valley Supplement to the 2016 State Strategy for the State Implementation Plan,'' October 25, 2018, 5.

[32] CARB, ''Notice of Public Meeting to Consider the San Joaquin Valley Supplement to the 2016 State Strategy for the State Implementation Plan,'' September 21, 2018, and CARB Resolution 18–49.

[33] CARB, ''Board Meeting Comments Log,'' November 2, 2018 and compilation of written comments; and J&K Court Reporting, LLC, ''Meeting, State of California Air Resources Board,'' October 25, 2018 (transcript of CARB's public hearing).

[34] 83 FR 62720 (citing required process for termination of sanctions clocks in 40 CFR 52.31(d)(5)).

[35] 81 FR 58010, 58074–58075.

[36] 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 $PM_{2.5}$. CAA section 189(b)(3) and 40 CFR 51.165(a)(1)(iv)(A)(*1*)(*vii*) and (*viii*) (defining ''major stationary source'' in serious $PM_{2.5}$ nonattainment areas).

[37] 57 FR 13498 (April 16, 1992).

[38] 57 FR 18070 (April 28, 1992).

[39] 59 FR 41998 (August 16, 1994).

More recently, in an August 24, 2016 final rule entitled, ''Fine Particulate Matter National Ambient Air Quality Standards: State Implementation Plan Requirements'' (''$PM_{2.5}$ SIP Requirements Rule''), the EPA established regulatory requirements and provided further interpretive guidance on the statutory SIP requirements that apply to areas designated nonattainment for the $PM_{2.5}$ standards.[40] We discuss these regulatory requirements and interpretations of the Act as appropriate in our evaluation of the SJV $PM_{2.5}$ Plan below.

B. Requirements for Extension of a Serious Area Attainment Date

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 five 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) demonstrate that it has 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.[41]

A state must seek an extension of the Serious area attainment date at the same time it submits the Serious area attainment plan, if the state cannot demonstrate attainment by the otherwise applicable statutory attainment date.[42]

Under the $PM_{2.5}$ SIP Requirements Rule, a state seeking an extension of the Serious area attainment date under section 188(e) must submit a Serious area attainment plan that meets the following requirements:

(1) Base year and attainment projected emissions inventory requirements in 40 CFR 51.1008(b);

(2) the most stringent measure requirement in 40 CFR 51.1005(b)(1)(iii) and 51.1010(b), and best available control measures not previously submitted;

(3) attainment demonstration and modeling requirements in 40 CFR 51.1011 and 40 CFR 51.1005(b)(1)(i);

(4) reasonable further progress requirements in 40 CFR 51.1012;

(5) quantitative milestone requirements in 40 CFR 51.1013;

(6) contingency measure requirements in 40 CFR 51.1014; and

(7) nonattainment new source review plan requirements pursuant to 40 CFR 51.165.[43]

In addition to establishing specific 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.[44] 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.

We evaluate the state's request for an extension of the Serious area attainment date in accordance with these statutory criteria and regulatory requirements, 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, 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 (and additional feasible measures) on relevant source categories will not bring the area into attainment by the statutory Serious area attainment date.[45] For the San Joaquin Valley, the Serious area attainment date for the 2006 $PM_{2.5}$ NAAQS under section 188(c)(2) was December 31, 2019.[46] BACM, including BACT, is the required level of control for a Serious area 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 that is impracticable to attain by the statutory deadline. The statutory provision for demonstrating impracticability requires that the demonstration be based on air quality modeling.[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 interprets 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.[48] This

[40] 81 FR 58010 (August 24, 2016).

[41] CAA section 188(e) and 40 CFR 51.1005(b). For a discussion of EPA's interpretation of the requirements of section 188(e), see the preamble to the $PM_{2.5}$ SIP Requirements Rule, 81 FR 58010, 58094–58097, and the General Preamble Addendum, 59 FR 41998, 42002.

[42] 40 CFR 51.1005(b)(2).

[43] 40 CFR 51.1005(b)(2). With respect to contingency measures and nonattainment new source review plan provisions, the EPA interprets section 51.1005(b)(2) to require submission of complete plan provisions addressing these requirements but not to require the EPA to approve such provisions before granting a section 188(e) extension request. 81 FR 58010, 58094–58095.

[44] CAA section 188(e).

[45] 81 FR 58010, 58094.

[46] 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. . . .'' The EPA designated the San Joaquin Valley as nonattainment for the 2006 $PM_{2.5}$ NAAQS effective December 14, 2009. 74 FR 58688. Therefore, the latest permissible attainment date under section 188(c)(2), for purposes of the 2006 $PM_{2.5}$ NAAQS in this area, is December 31, 2019.

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

[48] 81 FR 58010, 58095.

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.[49]

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 defined the term ''most stringent measure'' (MSM) as ''any permanent and enforceable control measure that achieves the most stringent emissions reductions in direct $PM_{2.5}$ emissions and/or emissions of $PM_{2.5}$ plan precursors from among those control measures which are either included in the SIP for any other NAAQS, or have been achieved in practice in any state, and that can feasibly be implemented in the relevant $PM_{2.5}$ NAAQS nonattainment area.'' [50] The Act does not specify an implementation deadline for MSM, but because the clear intent of section 188(e) is to minimize the length of any attainment date extension, the EPA has interpreted the Act to require implementation of MSM as expeditiously as practicable and no later than one year before the extended Serious area attainment date identified by the state in its extension request.[51]

An MSM demonstration must satisfy the requirements of the $PM_{2.5}$ SIP Requirements Rule as described in the preamble to the rule, as follows: [52]

(1) Update the emission inventory to identify all sources of direct $PM_{2.5}$ and all $PM_{2.5}$ precursor emissions in the nonattainment area;

(2) Identify all potential MSM to reduce emissions from sources of direct $PM_{2.5}$ and $PM_{2.5}$ plan precursors that are approved into any state implementation plan or used in practice in any state;

(3) Compare the potential MSM for each relevant source category to the measures, if any, already adopted for that source category in the nonattainment area to determine whether such potential MSM would further reduce emissions and, where the state chooses to reject a measure from further consideration, demonstrate that it is not technologically or economically feasible to implement the measure in whole or in part within five years after the applicable attainment date for the area; and

(4) Adopt and implement all potential MSM identified through this process that collectively will achieve attainment as expeditiously as practicable and no later than five years after the applicable attainment date, except those measures for which the state has provided reasoned justification for rejection, based on technological or economic feasibility.

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, MSM could theoretically result in a low level of control. This contrasts with BACM and BACT, which represent the ''best'' level of control feasible for an area, regardless of whether it has been implemented elsewhere. Thus, in some cases the MSM requirement may result in no more controls or emission reductions than those that result from implementing BACM and BACT. However, 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 so as to increase the potential that it will result in additional controls beyond the set of measures adopted as BACM and BACT. Accordingly, states are required to reanalyze any measures that were rejected during the state's BACM and BACT analysis to see if they have become feasible in the area given the longer attainment date sought under CAA section 188(e) and changes that have occurred in the interim that improve the feasibility of such measures.[53] MSM may also involve increasing the coverage of measures that were previously adopted as BACM and BACT.[54]

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 the Agency grant as short an extension as practicable, consistent with the objective of expeditious attainment of the NAAQS. 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 less 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 demonstrate attainment, using air quality modeling, by the most expeditious date practicable after the statutory Serious area attainment date.[55] 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 no later than one year before the extended attainment date requested by the state, 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.

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

A. Emissions Inventory

1. Statutory and Regulatory Requirements

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 nonattainment area. The EPA discussed the emissions inventory requirements that apply to $PM_{2.5}$ nonattainment areas,

[49] 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).

[50] 40 CFR 51.1000 and 81 FR 58010, 58096–58097; see also General Preamble Addendum, 42010 and 65 FR 19964, 19968 (April 13, 2000).

[51] 81 FR 58010, 58097.

[52] 40 CFR 51.1010(b) and 81 FR 58010, 58095–58097.

[53] Id.

[54] Id. at 58096.

[55] Id. at 58097.

including Serious area requirements, in the $PM_{2.5}$ SIP Requirements Rule and codified these requirements in 40 CFR 51.1008.[56] The EPA has also issued guidance concerning emissions inventories for $PM_{2.5}$ nonattainment areas.[57]

The base year emissions inventory should provide a state's best estimate of actual emissions from all sources of the relevant pollutants in the area, *i.e.,* all emissions that contribute to the formation of a particular NAAQS pollutant. For the $PM_{2.5}$ NAAQS, the base year inventory must include direct $PM_{2.5}$ emissions, separately reported filterable and condensable $PM_{2.5}$ emissions,[58] and emissions of all chemical precursors to the formation of secondary $PM_{2.5}$: nitrogen oxides (NO_X), sulfur dioxide (SO_2), volatile organic compounds (VOC), and ammonia (NH_3).[59] In addition, the emissions inventory base year for a Serious $PM_{2.5}$ nonattainment area must be one of the three years for which monitored data were used to reclassify the area to Serious, or another technically appropriate year justified by the state in its Serious area SIP submission.[60]

A state's SIP submission must include documentation explaining how it calculated emissions data for the inventory. In estimating mobile source emissions, a state should use the latest emissions models and planning assumptions available at the time the SIP is developed. The latest EPA-approved version of California's mobile source emission factor model for estimating tailpipe, brake, and tire wear emissions from on-road mobile sources that was available during the State's and District's development of the SJV $PM_{2.5}$ Plan was EMFAC2014.[61] Following CARB's submission of the Plan, the EPA approved EMFAC2017, the latest revision to this mobile source emissions model, and established grace periods during which EMFAC2014 may continue to be used for transportation conformity purposes (*i.e.,* new regional emissions analyses and CO, PM_{10}, and $PM_{2.5}$ hot-spot analyses).[62] States are also required to use the EPA's ''Compilation of Air Pollutant Emission Factors'' (''AP–42'') road dust method for calculating re-entrained road dust emissions from paved roads.[63] [64]

In addition to the base year inventory submitted to meet the requirements of CAA section 172(c)(3), the state must also submit a projected attainment year inventory and emissions projections for each RFP milestone year.[65] These future emissions projections are necessary components of the attainment demonstration required under CAA section 189(a)(1) and (b)(1) and the demonstration of RFP required under section 172(c)(2).[66] Emissions projections for future years (which are referred to in the Plan as ''forecasted inventories'') should account for, among other things, the ongoing effects of economic growth and adopted emissions control requirements. The state's SIP submission should include documentation to explain how the emissions projections were calculated. Where a state chooses to allow new major stationary sources or major modifications to use emission reductions credits (ERCs) that were generated through shutdown or curtailed emissions units occuring before the base year of an attainment plan, the projected emissions inventory used to develop the attainment demonstration must explicitly include the emissions from such previously shutdown or curtailed emissions units.[67]

2. Summary of State's Submission

Summaries of the planning emissions inventories for direct $PM_{2.5}$ and $PM_{2.5}$ precursors (NO_X, SO_X,[68] VOC,[69] and ammonia) and the documentation for the inventories for the San Joaquin Valley $PM_{2.5}$ nonattainment area are located in Appendix B (''Emissions Inventory'') and Appendix I (''New Source Review and Emission Reduction Credits'') of the 2018 $PM_{2.5}$ Plan.

CARB and District staff worked together to develop the emissions inventories for the San Joaquin Valley $PM_{2.5}$ nonattainment area. The District worked with operators of the stationary facilities in the nonattainment area to develop the stationary source emissions estimates. The responsibility for developing estimates for the area sources such as agricultural burning and paved road dust was shared by the District and CARB. CARB staff developed the emissions inventories for both on-road and non-road mobile sources.[70]

The Plan includes winter (24-hour) average and annual average daily planning inventories for the 2013 base year, which were modeled from the 2012 emissions inventory, and estimated emissions for forecasted years from 2017 through 2028 for the attainment and RFP demonstrations for the 1997, 2006, and 2012 $PM_{2.5}$ NAAQS.[71] Today we are proposing action on those winter average and annual average emissions inventories necessary to support the attainment plan and section 188(e) extension

[56] 81 FR 58010, 58078–58079.

[57] ''Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations,'' U.S. EPA, May 2017 (''Emissions Inventory Guidance''), available at *https://www.epa.gov/air-emissions-inventories/air-emissions-inventory-guidance-implementation-ozone-and-particulate.*

[58] The Emissions Inventory Guidance identifies the types of sources for which the EPA expects states to provide condensable PM emission inventories. Emissions Inventory Guidance, section 4.2.1 (''Condensable PM Emissions''), 63–65.

[59] 40 CFR 51.1008.

[60] 40 CFR 51.1008(b)(1).

[61] 80 FR 77337 (December 14, 2015). EMFAC is short for *EM*ission *FAC*tor. The EPA announced the availability of the EMFAC2014 model, effective on the date of publication in the **Federal Register**, for use in state implementation plan development and transportation conformity in California. Upon that action, EMFAC2014 was required to be used for all new regional emissions analyses and CO, PM_{10}, and $PM_{2.5}$ hot-spot analyses that were started on or after December 14, 2017, which was the end of the grace period for using the prior mobile source emissions model, EMFAC2011.

[62] 84 FR 41717 (August 15, 2019). The grace period for new regional emissions analyses begins on August 15, 2019 and ends on August 16, 2021, while the grace period for hot-spot analyses begins on August 15, 2019 and ends on August 17, 2020. 84 FR 41717, 41720.

[63] The EPA released an update to AP–42 in January 2011 that revised the equation for estimating paved road dust emissions based on an updated data regression that included new emission tests results. 76 FR 6328 (February 4, 2011). CARB used the revised 2011 AP–42 methodology in developing on-road mobile source emissions; see *https://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2016.pdf.*

[64] AP–42 has been published since 1972 as the primary source of the EPA's emission factor information. *https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors.* It contains emission factors and process information for more than 200 air pollution source categories. A source category is a specific industry sector or group of similar emitting sources. The emission factors have been developed and compiled from source test data, material balance studies, and engineering estimates.

[65] 40 CFR 51.1008 and 51.1012. Also, see Emissions Inventory Guidance, section 3 (''SIP Inventory Requirements and Recommendations'').

[66] 40 CFR 51.1004, 51.1008, 51.1011, and 51.1012.

[67] 40 CFR 51.165(a)(3)(ii)(C)(*1*).

[68] The SJV $PM_{2.5}$ Plan generally uses ''sulfur oxides'' or ''SO_X'' in reference to SO_2 as a precursor to the formation of $PM_{2.5}$. We use SO_X and SO_2 interchangeably throughout this notice.

[69] The SJV $PM_{2.5}$ Plan generally uses ''reactive organic gasses'' or ''ROG'' in reference to VOC as a precursor to the formation of $PM_{2.5}$. We use ROG and VOC interchangeably throughout this notice.

[70] The EPA regulations refer to ''non-road'' vehicles and engines whereas CARB regulations refer to ''Other Mobile Sources'' or ''off-road'' vehicles and engines. These terms refer to the same types of vehicles and engines. We refer herein to such vehicles and engines as ''non-road'' sources.

[71] 2018 $PM_{2.5}$ Plan, App. B, B–18 to B–19. The winter average daily planning inventory corresponds to the months of November through April, when daily, ambient $PM_{2.5}$ concentrations are typically highest. The base year inventory is from the California Emissions Inventory Development and Reporting System (CEIDARS) and future year inventories were estimated using the California Emission Projection Analysis Model (CEPAM), 2016 SIP Baseline Emission Projections, version 1.05.

request for the 2006 $PM_{2.5}$ NAAQS—*i.e.,* the 2013 base year inventory, forecasted inventories for the RFP milestone years of 2017, 2020, 2023, and 2026, and the forecasted 2024 attainment year inventory. Each inventory includes emissions from stationary, area, on-road, and non-road sources.

The base year inventories for stationary sources were developed using actual emissions reports made by facility operators. The State developed the base year emissions inventory for area sources using the most recent models and methodologies available at the time the State was developing the Plan.[72] The Plan also includes background, methodology, and inventories of condensable and filterable $PM_{2.5}$ emissions from stationary point and non-point combustion sources that are expected to generate condensable $PM_{2.5}$.[73] CARB used EMFAC2014 to estimate on-road motor vehicle emissions based on transportation activity data from the 2014 Regional Transportation Plan (2014 RTP) adopted by the transportation planning agencies in the San Joaquin Valley.[74] Re-entrained paved road dust emissions were calculated using a CARB methodology consistent with the EPA's AP–42 road dust methodology.[75]

CARB developed the emissions forecasts by applying growth and control profiles to the base year inventory. CARB's mobile source emissions projections take into account predicted activity rates and vehicle fleet turnover by vehicle model year and adopted controls.[76] In addition, the Plan states that the District is providing for use of pre-base year ERCs as offsets by accounting for such ERCs in the projected 2025 emissions inventory.[77] The 2018 $PM_{2.5}$ Plan identifies growth factors, control factors, and estimated offset use between 2013 and 2025 for direct $PM_{2.5}$, NO_X, SO_X, and VOC emissions by source category and lists all pre-base year ERCs issued by the District for PM_{10}, NO_X, SO_X, and VOC emissions, by facility.[78]

Table 1 provides a summary of the winter (24-hour) average inventories in tons per day (tpd) of direct $PM_{2.5}$ and NO_X emissions for the 2013 base year. Table 2 provides a summary of annual average inventories of direct $PM_{2.5}$ and NO_X emissions for the 2013 base year. These annual average inventories provide the basis for the control measure analysis and the RFP and attainment demonstrations in the SJV $PM_{2.5}$ Plan.

TABLE 1—SAN JOAQUIN VALLEY WINTER AVERAGE EMISSIONS INVENTORY FOR DIRECT $PM_{2.5}$ AND $PM_{2.5}$ PRECURSORS FOR THE 2013 BASE YEAR

[tpd]

Category	Direct $PM_{2.5}$	NO_X	SO_X	VOC	Ammonia
Stationary Sources	8.5	35.0	6.9	86.6	13.9
Area Sources	41.4	11.5	0.5	156.8	291.5
On-Road Mobile Sources	6.4	188.7	0.6	51.1	4.4
Non-Road Mobile Sources	4.4	65.3	0.3	27.4	0.0
Totals [a]	60.8	300.5	8.4	321.9	309.8

Source: 2018 $PM_{2.5}$ Plan, Appendix B, Tables B–1 through B–5.
[a] Totals reflect disaggregated emissions and may not add exactly as shown here due to rounding.

TABLE 2—SAN JOAQUIN VALLEY ANNUAL AVERAGE EMISSIONS INVENTORY FOR DIRECT $PM_{2.5}$ AND $PM_{2.5}$ PRECURSORS FOR THE 2013 BASE YEAR

[tpd]

Category	Direct $PM_{2.5}$	NO_X	SO_X	VOC	Ammonia
Stationary Sources	8.8	38.6	7.2	87.1	13.9
Area Sources	41.5	8.1	0.3	153.4	310.9
On-Road Mobile Sources	6.4	183.1	0.6	49.8	4.4
Non-Road Mobile Sources	5.8	87.4	0.3	33.8	0.0
Totals [a]	62.5	317.2	8.5	324.1	329.2

Source: 2018 $PM_{2.5}$ Plan, Appendix B, Tables B–1 through B–5.
[a] Totals reflect disaggregated emissions and may not add exactly as shown here due to rounding.

3. EPA's Evaluation and Proposed Action

The inventories in the 2018 $PM_{2.5}$ Plan are based on the most current and accurate information available to the State and District at the time they were developing the Plan and inventories, including the latest version of California's mobile source emissions model that had been approved by the EPA at the time, EMFAC2014. The inventories comprehensively address all source categories in the San Joaquin Valley $PM_{2.5}$ nonattainment area and are consistent with the EPA's inventory guidance.

In accordance with 40 CFR 51.1008(b)(1), the 2013 base year is one of the three years for which monitored data were used for reclassifying the San Joaquin Valley to Serious for the 2006 $PM_{2.5}$ NAAQS,[79] and it represents actual annual average emissions of all sources within the nonattainment area. Direct $PM_{2.5}$ and $PM_{2.5}$ precursors are included in the inventories, and filterable and condensable direct $PM_{2.5}$ emissions are identified separately.

With respect to future year baseline projections, we have reviewed the growth and control factors and find them acceptable and thus conclude that

[72] 2018 $PM_{2.5}$ Plan, App. B, section B.2 (''Emissions Inventory Summary and Methodology'').
[73] Id. at B–42 to B–44.
[74] Id. at B–37.
[75] Id. at B–28.
[76] Id. at B–18, B–19.
[77] 2018 $PM_{2.5}$ Plan, App. I, I–1 through I–5.
[78] Id. at App. I, Tables I–1 through I–5.
[79] 81 FR 2993, 2994.

the future baseline emissions projections in the 2018 $PM_{2.5}$ Plan reflect appropriate calculation methods and the latest planning assumptions. Also, as a general matter, the EPA will approve a SIP submission that takes emissions reduction credit for a control measure only where the EPA has approved the measure as part of the SIP. Thus, for example, to take credit for the emissions reductions from newly-adopted or amended District rules for stationary sources, the related rules must be approved by the EPA into the SIP. See the EPA's ''Technical Support Document, General Evaluation, San Joaquin Valley $PM_{2.5}$ Plan for the 2006 $PM_{2.5}$ NAAQS,'' February 2020 (''EPA's General Evaluation TSD''). Table III–A of EPA's General Evaluation TSD shows District rules with post-2013 compliance dates that are reflected in the future year baseline inventories, along with information on the EPA's approval of these rules, and shows that stationary source emissions reductions assumed by the SJV $PM_{2.5}$ Plan for future years are supported by rules approved as part of the California SIP for the San Joaquin Valley. With respect to mobile sources, the EPA has taken action in recent years to approve CARB mobile source regulations into the state-wide portion of the California SIP. We therefore find that the future year baseline projections in the 2018 $PM_{2.5}$ Plan are properly supported by SIP-approved stationary and mobile source measures.[80]

For these reasons, we are proposing to approve the 2013 base year emissions inventory in the 2018 $PM_{2.5}$ Plan as meeting the requirements of CAA section 172(c)(3) and 40 CFR 51.1008. We are also proposing to find that the forecasted inventories in the Plan provide an adequate basis for the BACM, MSM, RFP, and attainment demonstrations in the SJV $PM_{2.5}$ Plan.

B. $PM_{2.5}$ Precursors

1. Statutory and Regulatory Requirements

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 $PM_{2.5}$.[81] 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.[82]

Under subpart 4 of part D, title I of the CAA and the $PM_{2.5}$ SIP Requirements Rule, each state containing a $PM_{2.5}$ nonattainment area must evaluate all $PM_{2.5}$ precursors for regulation unless, for any given $PM_{2.5}$ precursor, the state demonstrates to the Administrator's satisfaction that such precursor does not contribute significantly to $PM_{2.5}$ levels that exceed the NAAQS in the nonattainment area.[83] 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 $PM_{2.5}$ 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.'' [84] The EPA has identified SO_2, NO_X, VOC, and ammonia as precursors to the formation of $PM_{2.5}$.[85] 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), BACM and BACT, MSM, and 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.[86] For example, under the EPA's longstanding interpretation of the control requirements that apply to stationary, area, and mobile sources of PM_{10} precursors in the nonattainment area under CAA section 172(c)(1) and subpart 4,[87] 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.[88]

Under the $PM_{2.5}$ SIP Requirements Rule, a state may elect to submit to the EPA a ''comprehensive precursor demonstration'' for a specific nonattainment area to show that emissions of a particular precursor from all existing sources located in the nonattainment area do not contribute significantly to $PM_{2.5}$ levels that exceed the standard in the area.[89] If the EPA determines that the contribution of the precursor to $PM_{2.5}$ levels in the area is not significant and approves the demonstration, the state is not required to control emissions of the relevant precursor from existing sources in the attainment plan.[90]

In addition, in May 2019, the EPA issued the ''$PM_{2.5}$ Precursor Demonstration Guidance'' (''$PM_{2.5}$ Precursor Guidance''), which provides recommendations to states for analyzing nonattainment area $PM_{2.5}$ emissions and developing such optional precursor demonstrations, consistent with the $PM_{2.5}$ SIP Requirements Rule.[91] The

[80] The future year emissions projections in the SJV $PM_{2.5}$ Plan assume implementation of CARB's Zero Emissions Vehicle (ZEV) sales mandate and greenhouse gas (GHG) standards. On September 27, 2019, the U.S. Department of Transportation and the EPA issued a notice of final rulemaking for the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program that, among other things, withdrew the EPA's 2013 waiver of preemption for the ZEV sales mandate and GHG standards. 84 FR 51310. See also proposed SAFE rule at 83 FR 42986 (August 24, 2018). However, the agencies' final rule withdrawing the 2013 waiver did not include final action on the federal fuel economy and GHG vehicle emissions standards from the SAFE proposal. If the fuel economy and GHG standards are finalized prior to our final rulemaking on the SJV $PM_{2.5}$ Plan, we will evaluate and address, as appropriate, the impact of the SAFE action on our proposed action.

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

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

[83] 81 FR 58010, 58017–58020.

[84] CAA section 302(g).

[85] 81 FR 58010, 58015.

[86] Id. at 58018–58019.

[87] General Preamble, 57 FR 13498, 13539–42.

[88] 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).

[89] 40 CFR 51.1006(a)(1).

[90] Id.

[91] ''$PM_{2.5}$ Precursor Demonstration Guidance,'' EPA–454/R–19–004, May 2019, including Memo dated May 30, 2019 from Scott Mathias, Acting Director, Air Quality Policy Division and Richard Wayland, Director, Air Quality Assessment Division, Office of Air Quality Planning and

$PM_{2.5}$ Precursor Guidance builds upon the draft version of the guidance, released on November 17, 2016 (''Draft $PM_{2.5}$ Precursor Guidance''), which CARB referenced in developing its precursor demonstration in the SJV $PM_{2.5}$ Plan.[92] The EPA's recommendations in the $PM_{2.5}$ Precursor Guidance are generally consistent with those in the Draft $PM_{2.5}$ Precursor Guidance, with some exceptions, including that the EPA's recommended contribution threshold for the 24-hour $PM_{2.5}$ NAAQS changed from 1.3 $\mu g/m^3$ in the draft guidance to 1.5 $\mu g/m^3$ in the final guidance.

We are evaluating the SJV $PM_{2.5}$ 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.[93]

2. Summary of State's Submission

The State presents a brief summary of its $PM_{2.5}$ precursor analysis in Chapter 6 of the 2018 $PM_{2.5}$ Plan and the full precursor demonstration in Appendix G of the 2018 $PM_{2.5}$ Plan.[94] CARB also provided clarifying information on its precursor assessment, including an Attachment A to its letter transmitting the SJV $PM_{2.5}$ Plan to the EPA [95] and further clarifications in three email transmittals.[96]

The Plan provides both concentration-based and sensitivity-based analyses of precursor contributions to ambient $PM_{2.5}$ concentrations in the San Joaquin Valley. These analyses led the State to conclude that direct $PM_{2.5}$ and NO_X emissions contribute significantly to ambient $PM_{2.5}$ levels that exceed the $PM_{2.5}$ NAAQS in the San Joaquin Valley while ammonia, SO_X, and VOC do not contribute significantly to such exceedances, as discussed below.[97] We summarize the State's analysis and conclusions below. For a more detailed summary of the precursor demonstration in the Plan, please refer to the EPA's ''Technical Support Document, EPA Evaluation of $PM_{2.5}$ Precursor Demonstration, San Joaquin Valley $PM_{2.5}$ Plan for the 2006 $PM_{2.5}$ NAAQS,'' February 2020 (''EPA's $PM_{2.5}$ Precursor TSD'').

For direct $PM_{2.5}$ and NO_X, the State modeled the sensitivity of ambient $PM_{2.5}$ in the San Joaquin Valley to a 30 percent (%) reduction in anthropogenic emissions of each pollutant in 2013, 2020, and 2024.[98] The State concluded that direct $PM_{2.5}$ and NO_X emissions reductions will continue to have a significant impact on annual and 24-hour $PM_{2.5}$ design values in the San Joaquin Valley, with NO_X reductions being particularly important.[99] Consistent with this conclusion, the State focused the control strategy and attainment demonstration on these two pollutants, as described in section IV.D of this preamble.

For ammonia, SO_X, and VOC, CARB assessed the 2015 annual average concentration of each precursor in ambient $PM_{2.5}$ at Bakersfield, for which the necessary speciated $PM_{2.5}$ data is available and where the highest $PM_{2.5}$ design values have been recorded in most years, and compared those concentrations to the recommended annual average contribution threshold of 0.2 $\mu g/m^3$ from the Draft $PM_{2.5}$ Precursor Guidance, which was available at the time the State developed the SIP.[100] The contributions of ammonia, SO_X, and VOC were 5.2 $\mu g/m^3$, 1.6 $\mu g/m^3$ and 6.2 $\mu g/m^3$, respectively.

Given that these levels are well above the EPA's recommended contribution threshold in the Draft $PM_{2.5}$ Precursor Guidance, CARB then modeled the sensitivity of ambient $PM_{2.5}$ in the San Joaquin Valley to 30% and 70% reductions in anthropogenic emissions of each precursor pollutant in 2013 (the Plan's base year), 2020 (the modeled attainment year for the 1997 $PM_{2.5}$ NAAQS), and 2024 (the modeled attainment year for the 2006 $PM_{2.5}$ NAAQS).[101] CARB supplemented the sensitivity analysis with consideration of additional information, including factors identified in the Draft $PM_{2.5}$ Precursor Guidance, such as emission trends, the appropriateness of future year versus base year sensitivity, available emission controls, and the severity of nonattainment.[102] The final version of the $PM_{2.5}$ Precursor Guidance confirms the relevance of these factors in a sensitivity analysis.[103]

The State's sensitivity-based analysis used the same modeling platform as that used for the Plan's attainment demonstration. The State modeled the sensitivity of ambient $PM_{2.5}$ concentrations in San Joaquin Valley to 30% and 70% emission reductions in 2013, 2020, and 2024 for each of ammonia, SO_X, and VOC. The State estimated base case (2013, 2020, and 2024) design values for $PM_{2.5}$ using Relative Response Factors and

Standards (OAQPS), EPA to Regional Air Division Directors, Regions 1–10, EPA.

[92] ''$PM_{2.5}$ Precursor Demonstration Guidance, Draft for Public Review and Comments,'' EPA–454/P–16–001, November 17, 2016, including Memo dated November 17, 2016 from Stephen D. Page, Director, OAQPS, EPA to Regional Air Division Directors, Regions 1–10, EPA.

[93] 40 CFR 51.1006(a)(1)(i) and (ii).

[94] A copy of the contents of App. G appears in the CARB Staff Report, App. C4 (''Precursor Demonstrations for Ammonia, SO_X, and ROG'').

[95] Letter dated May 9, 2019, from Richard Corey, Executive Officer, CARB, to Michael Stoker, Regional Administrator, EPA Region IX, Attachment A (''Clarifying information for the San Joaquin Valley 2018 Plan regarding model sensitivity related to ammonia and ammonia controls'').

[96] Email dated June 20, 2019, ''RE: SJV model disbenefit from SO_X reduction,'' from Jeremy Avise, CARB, to Scott Bohning, EPA Region IX, with attachment (''CARB's June 2019 Precursor Clarification''); email dated September 19, 2019, ''FW: SJV species responses,'' from Jeremy Avise, CARB, to Scott Bohning, EPA Region IX, with attachments (''CARB's September 2019 Precursor Clarification''); and email dated October 18, 2019, from Laura Carr, CARB to Scott Bohning, Jeanhee Hong, and Rory Mays, EPA Region IX, with attachment ''Clarifying Information on Ammonia'' (''CARB's October 2019 Precursor Clarification'').

[97] Direct $PM_{2.5}$ emissions are considered a primary source of ambient $PM_{2.5}$ (*i.e.,* no further formation in the atmosphere is required), and therefore is not considered a precursor pollutant under subpart 4, which may differ from a more generalized understanding of what contributes to ambient $PM_{2.5}$.

[98] SJV $PM_{2.5}$ Plan, Ch. 6, 6–11 to 6–12. CARB modeled the impacts of both NO_X reductions and direct $PM_{2.5}$ reductions but the direct $PM_{2.5}$ results were used only as a point of comparison, as direct $PM_{2.5}$ emissions must be regulated in all $PM_{2.5}$ nonattainment areas.

[99] Id. Ch. 6, 6–12; and 2018 $PM_{2.5}$ Plan, App. G, 2. CARB presents its sensitivity analysis for emission reductions in direct $PM_{2.5}$ and NO_X in the Plan's attainment demonstration appendix. 2018 $PM_{2.5}$ Plan, App. K, Table 46 (annual average design values) and Table 50 (24-hour average design values).

[100] SJV $PM_{2.5}$ Plan, App. G, 3. The Plan does not present a concentration-based analysis for the 24-hour average concentrations in the San Joaquin Valley. Instead, CARB relied on the annual average concentration based analysis as an interim step to the sensitivity-based analysis, for which CARB assessed the sensitivity of both 24-hour average and annual average ambient $PM_{2.5}$ concentrations to precursor emission reductions. Separately, the Plan presents a graphical representation of annual average ambient $PM_{2.5}$ components (*i.e.,* crustal particulate matter, elemental carbon, organic matter, ammonium sulfate, and ammonium nitrate) for 2011–2013 for Bakersfield, Fresno, and Modesto. SJV $PM_{2.5}$ Plan, Ch. 3, 3–3 to 3–4.

[101] SJV $PM_{2.5}$ Plan, Ch. 6, 6–11 to 6–12.

[102] Id. at App. G, 5.

[103] $PM_{2.5}$ Precursor Guidance, 18–19 (consideration of additional information), 31 (available emission controls), and 35–36 (appropriateness of future year versus base year sensitivity).

calculated the ammonia precursor contribution for a given year and for each sensitivity scenario (30% and 70% emissions reductions) as the difference between its base case design value and the design value for each sensitivity scenario.[104]

We summarize the State's sensitivity-based analysis and additional information in the sections that follow for ammonia, SO_X, and VOC.

a. Ammonia

For ammonia, the State compared the 24-hour precursor contributions to 1.3 μg/m^3, the recommended contribution threshold in the Draft $PM_{2.5}$ Precursor Guidance. For a modeled 30% ammonia emission reduction, the ambient $PM_{2.5}$ responses in 2013 ranged from 0.9 to 3.3 μg/m^3 across 15 monitoring sites, with a majority of sites above the 1.3 μg/m^3 contribution threshold (and also above the 1.5 μg/m^3 contribution threshold in the final $PM_{2.5}$ Precursor Guidance), whereas the $PM_{2.5}$ responses in 2024 were all below both recommended thresholds. For a modeled 70% ammonia emission reduction, the ambient $PM_{2.5}$ responses in 2013 ranged from 3.5 to 12.4 μg/m^3, with all monitoring sites above the 1.3 μg/m^3 threshold (and above the 1.5 μg/m^3 threshold), and the $PM_{2.5}$ responses in 2024 ranged from 1.2 to 3.0 μg/m^3, with most sites above both recommended thresholds. For further detail, please see the EPA's $PM_{2.5}$ Precursor TSD, Table 2, and the 2018 $PM_{2.5}$ Plan, Appendix G, Tables 2, 3, 5, and 7.

The State bases its ammonia precursor determination on the sensitivity analysis for the 2024 attainment year with a 30% ammonia emission reduction. These respectively reflect its assessment of research studies and the Plan's projected emission reductions, and on its assessment of available emission controls. As explained in the $PM_{2.5}$ Precursor Guidance, precursor responses may be above the recommend contribution threshold and yet not contribute significantly to levels that exceed the standard in the area. Therefore, as recommended by the EPA, the State considered additional information to consider whether its identified $PM_{2.5}$ responses constituted a significant contribution to ambient $PM_{2.5}$ in the San Joaquin Valley. The additional information included research studies, emission trends, and information to support the State's conclusion that a 30% ammonia emission reduction represented a reasonable upper bound on the ammonia emission reductions to model in estimating its contribution to ambient $PM_{2.5}$ levels. We summarize this additional information below and provide a more detailed evaluation in the EPA's $PM_{2.5}$ Precursor TSD.

The State describes previous research that supports its finding that ammonium nitrate $PM_{2.5}$ formation in the San Joaquin Valley is NO_X-limited rather than ammonia-limited.[105] Essentially, ammonia is so abundant that even with large ammonia emission reductions there would still be enough ammonia to combine with the available NO_X to readily form particulate ammonium nitrate. Therefore, ammonia emissions reductions would lead to only small decreases in $PM_{2.5}$ concentrations. In contrast, because emissions of NO_X are less abundant (*i.e.,* more limited relative to emissions of ammonia after normalizing for their differing molecular weights), the $PM_{2.5}$ concentrations in the atmosphere are more responsive to reductions in NO_X than to reductions of ammonia. Hence, the area is considered NO_X-limited. The State points to the conclusions of Lurmann et al. based on ambient measurements during the winter 2000–2001 CRPAQS (California Regional Particulate Air Quality Study) intensive field study.[106] That study found that most areas of the San Joaquin Valley were NO_X-limited with respect to ammonium nitrate formation. And since that time, large additional NO_X emission reductions have occurred, which would increase the degree to which ammonium nitrate formation in the San Joaquin Valley is NO_X-limited. Based on more recent aircraft-borne measurements during the 2013 DISCOVER–AQ campaign,[107] the State similarly concluded that ammonium nitrate formation is NO_X-limited based on the large amount of ''excess ammonia,'' which is defined as the amount of measured ammonia left over if all the nitrate and sulfate present were to combine with available ammonia to form particulate.[108] The CARB Staff Report describes these conclusions in more detail and lists results from multiple other recent studies with similar conclusions.[109]

Regarding emission trends, the CARB Staff Report presents an emission inventory-based argument on the relative insensitivity of $PM_{2.5}$ to ammonia reductions.[110] CARB compared the size of the ammonia and NO_X emission inventories in tons per day, after normalizing for their differing molecular weights, and found that ammonia was roughly three times as abundant as NO_X in 2013 and is projected to be about six times as abundant in 2025, due to the continuing decline in NO_X emissions (while ammonia emissions are generally constant into the future).[111] While the State recognized that this is only a ''first-level assessment,'' it provides additional support for the State's conclusion that NO_X, and not ammonia, is the limiting precursor for ammonium nitrate formation, and that the ammonium nitrate portion of ambient $PM_{2.5}$ would be expected to be relatively insensitive to ammonia emission reductions. This is also consistent with the ammonia sensitivity modeling for the San Joaquin Valley, which showed that $PM_{2.5}$ concentrations will be less sensitive to ammonia reductions as NO_X emissions go down in the future (*i.e.,* the $PM_{2.5}$ impacts were much smaller in the 2024 future modeled case compared to the 2013 base year).

The State finds that NO_X emissions in the San Joaquin Valley are projected to decrease by 53% from 2013 to 2024 while ammonia emissions are projected to remain relatively flat, thereby increasing the relative abundance of ammonia.[112] Based on the Plan's emission reduction projections combined with the research study conclusions, the State relies on the modeled responses for the 2024 future year, rather than the 2013 base year, stating that the future year NO_X emissions are more representative of San Joaquin Valley emission conditions.[113] The State references the Draft $PM_{2.5}$ Precursor Guidance, which notes that it may be appropriate to model future conditions that are more representative of current atmospheric conditions and those conditions expected closer to the attainment date. The State concludes states that this in

[104] This procedure is the procedure recommended by the EPA. $PM_{2.5}$ Precursor Guidance, 37.

[105] 2018 $PM_{2.5}$ Plan, App. G, G–9 to G–10; CARB Staff Report, App. C, 12–15; and Attachment A to CARB's submittal letter of May 9, 2019.

[106] Frederick W. Lurmann, Steven G. Brown, Michael C. McCarthy, and Paul T. Roberts, ''Processes Influencing Secondary Aerosol Formation in the San Joaquin Valley during Winter,'' Journal of the Air & Waste Management Association, (2006), 56:12, 1679–1693, DOI: 10.1080/10473289.2006.10464573.

[107] ''Deriving Information on Surface conditions from COlumn and VERtically Resolved Observations Relevant to Air Quality'', *https://www.nasa.gov/mission_pages/discover-aq/index.html.*

[108] 2018 $PM_{2.5}$ Plan, App. G, Figure 2.

[109] CARB Staff Report, App. C, 12.

[110] Id. App. C, 15.

[111] Annual average ammonia emissions are projected to decrease 4.6 tpd (1.4%) from 2013 to 2024. 2018 $PM_{2.5}$ Plan, App. B, Table B–5.

[112] 2018 $PM_{2.5}$ Plan, App. G, 8–9.

[113] Id. App. G, 9.

fact applies to the San Joaquin Valley.[114]

With respect to the State's selection of 30% as an upper bound on the ammonia reductions to model, the State described its review of the most important ammonia source categories in the San Joaquin Valley, existing control measures that affect ammonia emissions from these sources, additional mitigation options for these sources, and information provided in the $PM_{2.5}$ Precursor Guidance about ammonia reductions achieved nationwide from 2011 to 2017.[115] The primary sources of ammonia emissions identified in the 2018 $PM_{2.5}$ Plan are: (1) Confined animal facilities (CAFs), (2) agricultural fertilizer, (3) biosolids, animal manure, and poultry litter operations, and (4) organic material composting operations.[116] CAFs are subject to District Rule 4570; biosolids, animal manure, and poultry litter operations are subject to District Rule 4565; and organic material composting operations are subject to District Rule 4566. Although these District rules explicitly apply only to VOC emissions from these sources, the State concludes that these rules also reduce ammonia emissions. Appendix C of the 2018 $PM_{2.5}$ Plan cites a number of scientific studies that address the correlation between VOC and ammonia emissions from these emission sources.[117] Based on these evaluations, the State concludes that ammonia control measures achieving even the low end of the range (30%) are not feasible for implementation in the San Joaquin Valley and that it is therefore reasonable to treat a 30% ammonia reduction as an upper bound for modeling in the precursor demonstration.

In sum, the State's sensitivity analysis presents a range of $PM_{2.5}$ responses to ammonia emission reductions depending on base year versus future year and depending on the scale of emission reductions that may be possible. The Plan provides the State's bases for finding that the sensitivity result for 2024 better represents conditions in the San Joaquin Valley than the 2013 base year and for finding a 30% ammonia reduction to be a reasonable upper bound for modeled ammonia emission reductions in assessing the ammonia contribution. Based on these analyses, the State concludes that ammonia does not contribute significantly to levels above the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley.

b. SO_X

For SO_X, the State compared the 24-hour precursor contributions to the recommended draft contribution threshold of 1.3 $\mu g/m^3$ in the Draft $PM_{2.5}$ Precursor Guidance. For modeled SO_X emission reductions of 30% and 70%, the ambient $PM_{2.5}$ responses in 2013 ranged from -1.4 to +0.5 $\mu g/m^3$ across 15 monitoring sites, which all fall below the 1.3 $\mu g/m^3$ draft contribution threshold, and hence also below the contribution threshold of 1.5 $\mu g/m^3$ in the final version of the $PM_{2.5}$ Precursor Guidance. The response was below zero at most monitoring sites, indicating an increase, rather than decrease, in ambient $PM_{2.5}$ in response to SO_X emission reductions (*i.e.,* a disbenefit). Only the Stockton and Manteca sites had slightly positive responses to 30 and 70% emission reductions, and the Tranquillity site also had a slightly positive response only to a 30% reduction. For 2024, the response ranged from -0.3 $\mu g/m^3$ to +0.3 $\mu g/m^3$; these are also all below the contribution threshold, with most sites showing a disbenefit from SO_X reductions. For further detail, please see EPA's $PM_{2.5}$ Precursor TSD, Table 3, and the 2018 $PM_{2.5}$ Plan, Appendix G, Tables 8 and 9.

CARB also included additional information regarding emission trends and an evaluation of the SO_X emission reduction disbenefit. We summarize this additional information below and provide a more detailed evaluation in the EPA's $PM_{2.5}$ Precursor TSD.

In terms of emission trends, the State found that SO_X emissions decreased from 2013 to 2014 and then very gradually rise to 8.0 tpd in 2024.[118] On the basis of SO_X emissions being very similar in 2020 and 2024 (7.8 tpd and 8.0 tpd, respectively), the State concluded that the 2020 and 2024 sensitivity results were redundant. Comparing the ambient responses in 2013 and 2024, the State found that the responses were slightly less negative or, for a small number of sites, slightly more positive in 2024, but still no more than 0.6 $\mu g/m^3$ in response to a 70% SO_X emission reduction. This supports the State's conclusion as to the overall disbenefit of reducing SO_X emissions.

To explain the SO_X emission reduction disbenefit, CARB refers to the non-linearity of inorganic aerosol thermodynamics, as described in a study by West et al.[119] That paper discusses how, under certain conditions, reducing SO_X could free ammonia to combine with nitrate, increasing overall $PM_{2.5}$ mass. To investigate this issue further, CARB conducted simulations with the ISORROPIA inorganic aerosol thermodynamic equilibrium model used within the Community Multiscale Air Quality (CMAQ) model and provided clarifications to the EPA.[120] In essence, CARB states that for some conditions typical of San Joaquin Valley, ISORROPIA switches to a different chemical regime in which the disbenefit occurs. CARB states that it is not known how well this model behavior reflects the actual atmosphere, but CARB accepts the results because is it a well-known and widely used chemical model.

Based on the small and mostly negative modeled response of ambient $PM_{2.5}$ to SO_X emission reductions, and based on its scientific understanding of sulfate interactions with other molecules in the air, the State concludes that SO_X does not contribute significantly to ambient $PM_{2.5}$ levels that exceed the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley.

c. VOC

For VOC, CARB compared the 24-hour precursor contributions to the EPA's recommended draft contribution threshold of 1.3 $\mu g/m^3$. For a modeled 30% VOC emission reduction, the ambient $PM_{2.5}$ responses in 2013 ranged from 0.1 to 1.9 $\mu g/m^3$ across 15 monitoring sites, with two sites above the 1.3 $\mu g/m^3$ draft contribution threshold.[121] The $PM_{2.5}$ responses to a 70% VOC emission reduction in 2013 ranged from 0.2 $\mu g/m^3$ to 4.8 $\mu g/m^3$, including responses above the 1.3 $\mu g/m^3$ draft contribution threshold at a majority of sites. For a modeled 30% VOC emission reduction, the ambient $PM_{2.5}$ responses in 2024 ranged from -0.4 to 0.0 $\mu g/m^3$, with all monitoring sites below the 1.3 $\mu g/m^3$ draft

[114] Id (referencing Draft $PM_{2.5}$ Precursor Guidance, 33). See also $PM_{2.5}$ Precursor Guidance, 35.

[115] 2018 $PM_{2.5}$ Plan, App. G, 13 and App. C, section C–25 and email dated October 18, 2019, from Laura Carr, CARB to Scott Bohning, EPA Region IX, attaching document entitled ''Clarifying Information on Ammonia.''

[116] 2018 $PM_{2.5}$ Plan, App. C, section C–25.

[117] Id. at C–314 and following.

[118] 2018 $PM_{2.5}$ Plan, App. G, Figure 4.

[119] 2018 $PM_{2.5}$ Plan, App. K, section 5.6 (''$PM_{2.5}$ Precursor Sensitivity Analysis''); and West, J.J., Ansari, A.S., Pandis, S.N., 1999, Marginal $PM_{2.5}$: Nonlinear aerosol mass response to sulfate reductions in the eastern United States, *Journal of the Air & Waste Management Association,* 49, 1415–1424. *https://doi.org/10.1080/10473289.1999.10463973.*

[120] CARB's June 2019 Precursor Clarification.

[121] We note that one site (Visalia) has a modeled response above the EPA's final recommended contribution threshold of 1.5 $\mu g/m^3$ and one additional site (Bakersfield-California Avenue) has a modeled response below the 1.5 $\mu g/m^3$ threshold but above the EPA's draft threshold of 1.3 $\mu g/m^3$.

contribution threshold, and hence also below the contribution threshold of 1.5 μg/m^3 that was finalized the $PM_{2.5}$ SIP Requirements Rule. The $PM_{2.5}$ responses to a 70% VOC emission reduction in 2024 ranged from −1.0 to 0.0 μg/m^3, with all monitoring sites below the 1.3 μg/m^3 draft contribution threshold. In other words, CARB models a decrease in ambient $PM_{2.5}$ levels in 2013 in response to either a 30% or 70% VOC emission reduction, whereas CARB models an increase in ambient $PM_{2.5}$ levels in 2024 in response to either a 30% or 70% reduction in VOC emissions, *i.e.,* a disbenefit. For further detail, please see EPA's $PM_{2.5}$ Precursor TSD, Table 4, and the 2018 $PM_{2.5}$ Plan, Appendix G, Tables 10, 11, 13, and 15.

CARB then considered additional information to consider whether these $PM_{2.5}$ responses constituted a significant contribution to ambient $PM_{2.5}$ in the San Joaquin Valley, including emission trends and an assessment of the modeled disbenefit of VOC emission reductions in 2024. CARB bases its precursor determination on sensitivity analysis for the 2024 attainment year, reflecting its assessment of the Plan's projected emission reductions. We summarize this additional information below and present greater detail in the EPA's $PM_{2.5}$ Precursor TSD.

Regarding emission trends, CARB found that VOC emissions would decrease approximately 30 tpd (or 9%) from 2013 to 2024.[122] The State concludes that the formation of ambient $PM_{2.5}$ from VOC may therefore differ in base and future years and that the sensitivity analysis for 2013 is not representative of current or future conditions.

CARB explained the modeled disbenefit of VOC reductions as follows: Emissions of VOC and NO_X react in the atmosphere to form organic nitrate species, such as peroxyacetyl nitrate (PAN), meaning that some portion of the NO_X emissions is not available to react with ammonia to form ammonium nitrate. In other words, VOC emissions are a ''sink'' for NO_X emissions. Reducing VOC emissions therefore reduces the formation of organic nitrates, so the sink is smaller and nitrate molecules are freed to react with ammonia to form particulate ammonium nitrate.[123] The State further explored the VOC disbenefit based on a 2016 CARB modeling assessment provided in Appendix A (''Air Quality Modeling'') of the ''2016 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard'' for the San Joaquin Valley (''2016 $PM_{2.5}$ Plan''), which CARB submitted to the EPA as a SIP revision on May 10, 2019.[124]

Based on its sensitivity-based analysis of VOC emission reductions in the 2013 base and 2024 future years, VOC emission trends, and the scientific understanding of atmospheric VOC chemistry in the San Joaquin Valley, CARB concludes that VOC emissions do not contribute significantly to $PM_{2.5}$ levels that exceed the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley.

3. EPA's Evaluation and Proposed Action

The EPA has evaluated the State's precursor demonstration consistent with the $PM_{2.5}$ SIP Requirements Rule and the recommendations in the $PM_{2.5}$ Precursor Guidance. Based on this evaluation, the EPA agrees that NO_X emissions contribute significantly to ambient $PM_{2.5}$ levels that exceed the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley and that NO_X emission sources, therefore, remain subject to control requirements under subparts 1 and 4 of part D, title I of the Act. For the reasons provided below, the EPA proposes to approve the State's demonstration that ammonia, SO_X, and VOC emissions do not contribute significantly to ambient $PM_{2.5}$ levels that exceed the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley.

Regarding the State's analytical approach, the EPA finds that the State based its analyses on the latest available data and studies concerning ambient $PM_{2.5}$ formation in the San Joaquin Valley from precursor emissions. Regarding the required concentration-based analysis, the EPA finds that the State assessed the absolute annual average contribution of each precursor in ambient $PM_{2.5}$ (*i.e.,* in 2015). On the basis of the absolute concentrations being well above the EPA's recommended contribution thresholds for both the 24-hour and annual average NAAQS, the State proceeded with its sensitivity-based analysis, which is an acceptable progression of analyses under the $PM_{2.5}$ SIP Requirements Rule.[125]

With respect to the sensitivity-based analysis, we find that the State performed its analyses in a straightforward application of the EPA's recommended approach—*i.e.,* for each modeled year and percent precursor emission reduction, the State estimated the ambient $PM_{2.5}$ response using the procedure recommended in the $PM_{2.5}$ Precursor Guidance, and compared the result to the recommended contribution threshold. The EPA also finds that the performance of the photochemical model was adequate for use in estimating the ambient $PM_{2.5}$ responses, as discussed in section J (''Air Quality Model Performance'') of the EPA's ''Technical Support Document, EPA Evaluation of Air Quality Modeling, San Joaquin Valley $PM_{2.5}$ Plan for the 2006 $PM_{2.5}$ NAAQS,'' February 2020 (''EPA's Modeling TSD''). The State considered the EPA's recommended range of emission reductions (30% to 70%) for the 2013 base year, an interim year (2020), and the projected 2024 attainment year for the 2006 $PM_{2.5}$ NAAQS, and quantified the estimated response of ambient $PM_{2.5}$ concentrations to precursor emission changes for the first time in a $PM_{2.5}$ SIP submission for the San Joaquin Valley. The EPA finds that such quantification and CARB's consideration of additional information provide an informed basis on which to make a determination as to whether ammonia, SO_X, and VOC do or do not contribute significantly to ambient $PM_{2.5}$ levels that exceed the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley. Therefore, we turn to our evaluation of the State's determination for each of these three precursor pollutants.

a. Ammonia

For ammonia, as detailed above, CARB estimated the ambient $PM_{2.5}$ response to both a 30% and a 70% emission reduction. We find that it was appropriate for the State to consider additional information to interpret those results to determine whether the ammonia contribution is significant. We have evaluated CARB's determination that the projected 2024 attainment year is more representative of conditions in the San Joaquin Valley for sensitivity-based analyses and that 30% is a reasonable upper bound for ammonia emission reductions to assess the precursor contribution, as discussed below.

The State provided ample information from scientific studies based on ambient measurements to help assess the estimated sensitivity of ambient $PM_{2.5}$ to ammonia reductions. Conclusions based on ambient data are particularly relevant because they provide direct evidence of the chemical state of the atmosphere, and are not dependent on modeled estimates of emissions or

[122] 2018 $PM_{2.5}$ Plan, App. G, 19 and Figure 5.

[123] 2018 $PM_{2.5}$ Plan, App. K, 72 (citing Meng, Z., D. Dabdub, D., Seinfeld, J.H., Chemical Coupling Between Atmospheric Ozone and Particulate Matter, *Science* 277, 116 (1997). DOI: 10.1126/science.277.5322.116).

[124] 2016 $PM_{2.5}$ Plan, App. A, A–57. See also 2018 $PM_{2.5}$ Plan, App. K, section 5.6 (''$PM_{2.5}$ Precursor Sensitivity Analysis''), 71–72.

[125] For further discussion of the EPA's evaluation of the State's concentration-based analysis, see EPA's $PM_{2.5}$ Precursor TSD, sections entitled ''Concentration-based analysis'' within the EPA's evaluation for each of ammonia, SO_X, and VOC.

ambient $PM_{2.5}$ concentrations. Measurements represent the ''real world'' result of the pollutants' differing geographic distributions, the various meteorological and chemical factors influencing their conversion to particulate, and their removal from the atmosphere by deposition and other processes. The observed abundance of ammonia relative to nitric acid, and the positive amount of chemically excess ammonia, both provide strong evidence that ammonia is not the limiting pollutant for particulate ammonium nitrate formation. They also support the State's conclusion that $PM_{2.5}$ is likely to be insensitive to ammonia emission reductions.

We note that the model response to precursor reductions may be unrealistically large. There is some evidence that ammonia emissions may be underestimated based on direct measurements of ammonia emissions flux during two measurement campaigns, as discussed in the EPA's $PM_{2.5}$ Precursor TSD. If ammonia emissions were higher in the modeling, then ammonia would be more abundant relative to nitrate and particulate nitrate formation would be more NO_X-limited, and less sensitive to ammonia reductions. This would make the model response more consistent with the ambient measurement studies, which suggest a very low sensitivity to ammonia. The ammonia contribution to $PM_{2.5}$ levels above the standard may therefore be less than estimated by the State modeling. The 2024 year modeling incorporates lower NO_X emissions and so has a larger abundance of ammonia relative to nitrate, more similar to the studies' ambient measurements. The 2024 response to ammonia reductions may thus be more reliable than the 2013 and 2020 responses, and may be more representative of current atmospheric conditions despite its use of emission projections for a future year.

The relative sizes of the ammonia and NO_X precursor emission inventories after accounting for their differing molecular weights are a rough indicator of which is the limiting pollutant for production of ammonium nitrate, because it forms from a one-to-one ratio of molecules derived from each precursor (*i.e.,* one ammonium nitrate forms from one ammonium and one nitrate). However, unlike measurements and photochemical modeling, a simple emissions ratio does not account for the various processes mentioned above; it just assumes all the emitted molecules find each other and fully react. The State found ammonia to be roughly three times as abundant as NO_X currently after accounting for their differing molecular weights, and even more so in the future. The EPA repeated the exercise to account for SO_X as well, and found that the ratio of total ammonia to that needed to react with both nitrate and sulfate ranged from 2.7 in 2013 to 5.6 in 2028. These are about the same as the CARB NO_X-only results, because SO_X emissions are very small relative to those of NO_X and ammonia (*e.g.,* in 2013, winter daily emissions were 8.4 tpd SO_X, vs. 300.5 tpd for NO_X and 309.8 tpd for ammonia).[126] These observations support the State's finding that $PM_{2.5}$ is expected to be relatively insensitive to ammonia reductions, though it is not definitive.

The State also concludes that there are continuing large decreases in NO_X emissions in the San Joaquin Valley from 2013 to 2024, including 53% reductions from baseline measures and 10–11% reductions from additional new measures, while ammonia emissions are projected to remain roughly constant (*i.e.,* decreasing 1–2%).[127] In conjunction with the ambient evidence that ammonia is already chemically overabundant relative to NO_X in the San Joaquin Valley, this shows that in the future the overabundance will become even greater, and thus ambient $PM_{2.5}$ would be even less responsive to ammonia reductions. This adds conservatism to the State's conclusions about ammonia insensitivity based on the scientific studies.

While the base year for an attainment plan for a given nonattainment area is generally more representative of current conditions, the EPA believes that either a base year or a future year may be used for modeling an ambient $PM_{2.5}$ response to precursor emission reductions, provided the state explains how the choice of analysis year and associated assumptions are appropriate.[128] The State relied on 2024 model responses mainly on the grounds that large NO_X emissions reductions will occur during 2013–2024, so that the 2024 results will continue to be representative, unlike earlier model years. These reductions are the result of regulations put in place by past air quality planning decisions, and they will occur regardless of decisions about additional NO_X or ammonia controls in the SJV $PM_{2.5}$ Plan. In assessing the effect of potential ammonia reductions, the EPA believes it is reasonable to account for these NO_X reductions and the effect that ammonia reductions would have in the attainment year and after. In addition, as noted above, the greater abundance of ammonia relative to NO_X in the 2024 year modeling is more consistent with recent ambient measurements, and may make the 2024 responses more representative of current atmospheric conditions than the other model years for assessing sensitivity to ammonia reductions. Therefore, in consideration of the scientific studies and emission trends, including the projected large amount of NO_X emission reductions through the attainment period, the EPA agrees that the modeled 2024 year is acceptable and representative of conditions in the San Joaquin Valley.

In the context of interpreting the full set of modeling results for ammonia emissions reductions, the EPA also considered the State's conclusion that the absence of available ammonia controls for sources in the San Joaquin Valley supports its decision to treat a 30% reduction as a reasonable upper bound on the ammonia emission reductions to model in estimating the precursor contribution. As the State correctly notes, the 30% to 70% range recommended by the EPA is based on historical NO_X and SO_X emission reductions, and changes in ammonia emission levels nationally from 2011 to 2017 ranged from a 9% decrease to a 6% increase.[129] The State's descriptions of both the past research relied upon to develop existing rules that apply to ammonia emission sources and ongoing research show that it has considered the availability of ammonia controls both in the past and in the present context, and that the State has a basis for its conclusion that 30% is a reasonable upper bound on achievable reductions for ammonia.

In sum, we find that the State quantified the sensitivity of ambient $PM_{2.5}$ levels to reductions in ammonia using appropriate modeling techniques, which performed well, and that the State's choice of 2024 as the reference point for purposes of evaluating the sensitivity of ambient $PM_{2.5}$ levels to ammonia emission reductions is well-supported. We also find that the State adequately documented its bases for using a 30% reduction in ammonia emissions as an upper bound in the modeling to assess ambient sensitivity to ammonia emission reductions. Based on all of these considerations, the EPA proposes to approve the State's demonstration that ammonia emissions do not contribute significantly to ambient $PM_{2.5}$ levels that exceed the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley.

[126] 2018 $PM_{2.5}$ Plan, App. B, Tables B–2, B–3, and B–4.

[127] For further discussion of the SJV $PM_{2.5}$ Plan's control strategy, see section IV.D.4.b of this preamble.

[128] $PM_{2.5}$ Precursor Guidance, 35–36.

[129] $PM_{2.5}$ Precursor Guidance, Table 2, page 30.

b. SO_X

For SO_X, the State found that the ambient $PM_{2.5}$ responses to SO_X emission reductions were below the EPA's recommended contribution threshold of 1.3 μg/m³ in the Draft $PM_{2.5}$ Precursor Guidance (and below the EPA's recommended threshold of 1.5 μg/m³ in the (final) $PM_{2.5}$ Precursor Guidance) and, indeed, that for most sites there would be an increase in ambient $PM_{2.5}$ levels in response to such reductions (*i.e.,* a disbenefit). The EPA has evaluated the State's determination as to this disbenefit and the State's resulting conclusion as to the precursor's significance.

Because the results of the sensitivity analysis were all below the EPA's recommended 24-hour contribution thresholds at both the 30% and 70% emission reductions, and in both the 2013 base year and 2024 attainment year, it is not necessary to distinguish between the timing and scale of emission reductions with respect to the response of ambient $PM_{2.5}$ levels, as in the ammonia evaluation where the results diverged according to scale and timing of modeled emission reductions. The EPA's $PM_{2.5}$ Precursor TSD contains additional detail on the EPA's evaluation of SO_X as a $PM_{2.5}$ precursor, including the unexpected disbenefit of reducing SO_X emissions. Accordingly, we find that the State's decision to rely on the 2013 sensitivity modeling results for a 30% SO_X reduction is acceptable.

Therefore, on the basis of the modeled ambient $PM_{2.5}$ response to both a 30% and 70% reduction in SO_X emissions in 2013, and the facts and circumstances of the area, the EPA proposes to approve the State's demonstration that SO_X emissions do not contribute significantly to ambient $PM_{2.5}$ levels that exceed the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley.

c. VOC

For VOC, the State found that the ambient $PM_{2.5}$ response to VOC emission reductions were generally below the EPA's recommended contribution threshold of 1.3 μg/m³ in the Draft $PM_{2.5}$ Precursor Guidance (and below the EPA's recommended threshold of 1.5 μg/m³ in the final $PM_{2.5}$ Precursor Guidance), and often predicted an increase in ambient $PM_{2.5}$ levels in response to such reductions (*i.e.,* a disbenefit), except for a 70% emission reduction for the 2013 base year, where the State predicted the ambient $PM_{2.5}$ response to be above both recommended thresholds at a majority of sites. The EPA has evaluated and agrees with the State's determination that the projected 2024 attainment year is more representative of conditions in the San Joaquin Valley for sensitivity-based analyses and that VOC reductions in 2024 would mostly result in a disbenefit to ambient $PM_{2.5}$ levels, as well as the State's resulting conclusion as to whether VOC's contribution is significant.

Regarding emission trends, the EPA agrees that the 9% VOC emissions decrease from 2013 to 2024 favors reliance on the 2024 modeling results. Furthermore, there is a large decrease in NO_X emissions over this period, as discussed in the EPA's evaluation of ammonia in section IV.B.3.a of this preamble, which affects the atmospheric chemistry with respect to ambient $PM_{2.5}$ formation from VOC emissions. The 9% VOC emission reductions and the vast majority of NO_X emissions will result from baseline measures that are projected to occur, even absent any further action by the State. We therefore find it reasonable to rely on future year 2024 modeled responses to VOC reductions. The EPA also finds that the State provided a reasonable explanation for the VOC reduction disbenefit and evidence that it occurs in the San Joaquin Valley.

For all of these reasons, we propose to approve the State's demonstration that VOC emissions do not contribute significantly to ambient $PM_{2.5}$ levels that exceed the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley.

C. Best Available Control Measures and Most Stringent Measures

1. Statutory and Regulatory Requirements

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 has defined BACM in the $PM_{2.5}$ SIP Requirements Rule to mean ''any technologically and economically feasible control measure that can be implemented in whole or in part within 4 years after the date of reclassification of a Moderate $PM_{2.5}$ nonattainment area to Serious and that generally can achieve greater permanent and enforceable emissions reductions in direct $PM_{2.5}$ emissions and/or emissions of $PM_{2.5}$ plan precursors from sources in the area than can be achieved through the implementation of RACM on the same source(s). BACM includes best available control technology (BACT).'' [130]

The EPA generally considers 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.[131] 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.[132] If RACM and RACT level controls of emissions have been insufficient to reach attainment, the CAA contemplates the implementation of more stringent controls, controls on more sources, or other adjustments to the control strategy necessary to attain the NAAQS in the area.

Consistent with longstanding guidance provided in the General Preamble Addendum, the preamble to the $PM_{2.5}$ SIP Requirements Rule discusses the following steps for determining BACM and BACT:

(1) Develop a comprehensive emission inventory of the sources of $PM_{2.5}$ and $PM_{2.5}$ precursors;

(2) Identify potential control measures;

(3) Determine whether an available control measure or technology is technologically feasible;

(4) Determine whether an available control measure or technology is economically feasible; and

(5) Determine the earliest date by which a control measure or technology can be implemented in whole or in part.[133]

The EPA allows consideration of factors such as physical plant layout, energy requirements, needed infrastructure, and workforce type and habits when considering technological feasibility. For purposes of evaluating economic feasibility, the EPA allows consideration of factors such as the capital costs, operating and maintenance costs, and cost effectiveness (*i.e.,* cost per ton of

[130] 40 CFR 51.1000 (definitions). In longstanding guidance, the EPA has similarly defined BACM to mean, ''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.'' General Preamble Addendum, 42010, 42013.

[131] 81 FR 58010, 58081 and General Preamble Addendum, 42011, 42013.

[132] Id. and General Preamble Addendum, 42009–42010.

[133] 81 FR 58010, 58083–58085.

pollutant reduced by a measure or technology) associated with the measure or control.[134]

Once these analyses are complete, the state must use this information to develop enforceable control measures and submit them to the EPA for evaluation as SIP provisions to meet the basic requirements of CAA section 110 and any other applicable substantive provisions of the Act. The EPA is using these steps as guidelines in the evaluation of the BACM and BACT measures and related analyses in the SJV $PM_{2.5}$ Plan.

Because the EPA reclassified the San Joaquin Valley as Serious nonattainment for the 2006 $PM_{2.5}$ NAAQS effective February 19, 2016,[135] the date four years after reclassification is February 19, 2020. In this case, however, the Serious area attainment date for the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley under section 188(c) is no later than December 31, 2019, and to qualify for an extension of this date under section 188(e), the state must, among other things, demonstrate that implementation of BACM and BACT for relevant source categories will not bring the area into attainment by this date. Given these circumstances, the EPA is evaluating the Plan's control strategy for implementation of BACM and BACT as expeditiously as practicable and no later than December 31, 2019.[136]

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 (MSM) 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 state must implement MSM as expeditiously as practicable and no later than the beginning of the year containing the attainment date identified by the state in its extension request, *i.e.,* in this case, by January 1, 2024, because the State is seeking an extension of the attainment date to December 31, 2024, under section 188(e).[137] Section III.B of this preamble contains a more detailed discussion of the MSM requirement in CAA section 188(e).

2. Summary of State's Submission

As discussed in section IV.A of this proposed rule, Appendix B of the 2018 $PM_{2.5}$ Plan contains the planning inventories for direct $PM_{2.5}$ and all $PM_{2.5}$ precursors (NO_X, SO_X, VOC, and ammonia) for the San Joaquin Valley nonattainment area together with documentation to support these inventories. Each inventory includes emissions from stationary, area, on-road, and non-road emission sources, and the State specifically identifies the condensable component of direct $PM_{2.5}$ for relevant stationary and area source categories. As discussed in section IV.B of this preamble, the State's analysis indicates that the Plan should control emissions of $PM_{2.5}$ and NO_X in order to reach attainment. Accordingly, the Plan evaluates potential controls for those pollutants in the analysis of what is necessary to meet the BACM (including BACT) and MSM requirements.

For stationary and area sources, the District identifies the sources of direct $PM_{2.5}$ and NO_X in the San Joaquin Valley that are subject to District emission control measures and provides its evaluation of these regulations for compliance with BACM and MSM requirements in Appendix C of the 2018 $PM_{2.5}$ Plan. As part of its process for identifying candidate BACM and MSM and considering the technical and economic feasibility of additional control measures, the District reviewed the EPA's guidance documents on BACM, additional guidance documents on control measures for direct $PM_{2.5}$ and NO_X emission sources, and control measures implemented in other ozone and $PM_{2.5}$ nonattainment areas in California and other states.[138]

For mobile sources, CARB identifies the sources of direct $PM_{2.5}$ and NO_X in the San Joaquin Valley that are subject to the State's emission control measures and provides its evaluation of these regulations for compliance with BACM and MSM requirements in Appendix D of the 2018 $PM_{2.5}$ Plan. Appendix D describes CARB's process for determining BACM and MSM, including identification of the sources of direct $PM_{2.5}$ and NO_X in the San Joaquin Valley, identification of potential control measures for such sources, assessment of the stringency and feasibility of the potential control measures, and adoption and implementation of feasible control measures.[139] CARB further discusses its current mobile source control program and additional mobile source measures in the Valley State SIP Strategy. Appendix D of the 2018 $PM_{2.5}$ Plan also describes the current efforts of the eight local jurisdiction metropolitan planning organizations (MPOs) to implement cost-effective transportation control measures (TCMs) in the San Joaquin Valley.[140]

3. EPA's Evaluation and Proposed Action

As discussed in sections III.B and IV.D of this preamble, the EPA has established a process for evaluating potential BACM (including BACT) 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 SJV $PM_{2.5}$ Plan's provisions for including MSM alongside our evaluation of the Plan's provisions for implementing BACM and BACT for each identified source category.

The first step in determining BACM and MSM is to develop a comprehensive emissions inventory of the sources of direct $PM_{2.5}$ and relevant $PM_{2.5}$ precursors that can be used with modeling to determine the effects of these sources on ambient $PM_{2.5}$ levels. Based on our review of the emission inventories provided in Appendix B of the 2018 $PM_{2.5}$ Plan and the State's and District's identification of the sources subject to control in Appendix C and Appendix D, the EPA is proposing to find that the Plan appropriately identifies all sources of direct $PM_{2.5}$ and NO_X that are subject to evaluation for potential control consistent with the requirements of subpart 4 of part D, title I of the Act.

The remaining steps are to identify potential control measures for each source category, determine whether available control measures or technologies are technologically and economically feasible for implementation in the area, and determine the earliest date by which those control measures or technologies found to be feasible can be implemented, in whole or in part.[141]

We discuss below key components of the BACM and MSM evaluations provided by the District, CARB, and the

[134] 40 CFR 51.1010(a)(3) and 81 FR 58010, 58041–58042.

[135] 81 FR 2993.

[136] 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.

[137] 40 CFR 51.1011(b)(5) (requiring implementation of all control measures needed for attainment as expeditiously as practicable and no later than the beginning of the year containing the applicable attainment date).

[138] 2018 $PM_{2.5}$ Plan, Chapter 4, section 4.3.1.

[139] Id. at App. D, Ch. II.

[140] Id. at App. D, D–127 and D–128.

[141] 81 FR 58010, 58083–58085. The EPA's recommended steps for a BACM demonstration are substantively similar to the required steps for an MSM demonstration in 40 CFR 51.1010(b).

local jurisdiction MPOs in the SJV $PM_{2.5}$ Plan in accordance with these steps. We provide a more detailed evaluation of many of the District's control measures for stationary and area sources in the EPA's ''Technical Support Document, EPA Evaluation of BACM/MSM, San Joaquin Valley $PM_{2.5}$ Plan for the 2006 $PM_{2.5}$ NAAQS,'' February 2020 (''EPA's BACM/MSM TSD''), together with recommendations for possible future improvements to these rules.

a. District Measures for Stationary and Area Sources

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.[142] 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.[143] The EPA approved Rule 4103 into the California SIP on January 4, 2012.[144]

The District compared Rule 4103 to several other open burning rules implemented in other parts of California and found that no other rules are more stringent, as a whole, than Rule 4103. According to the information provided, 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 generally limits burning on RWC curtailment days through implementation of its Smoke Management Program, which specifically allocates allowable burn acreage for 97 geographic zones based on local meteorology. 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. On balance we find that Rule 4103's general prohibitions on the burning of specific agricultural crops and burn permitting program are more effective means for reducing $PM_{2.5}$ emissions than targeted restrictions on RWC curtailment days.

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 San Joaquin Valley or for the development of alternatives to burning.[145] 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.[146]

Boilers, Steam Generators, and Process Heaters Greater Than 5.0 Million British Thermal Units per Hour (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 parts per million (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 MMBtu/hr.[147] The EPA approved Rule 4306 into the California SIP on January 13, 2010.[148] 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 related operational requirements for these units but allows sources to pay an emission fee in lieu of compliance with the NO_X emission limits.[149] 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.[150]

The District compared both Rule 4306 and Rule 4320 to several other analogous rules implemented in other parts of California, including the Sacramento Metro area, the South Coast, and the Bay Area.[151] According to the information provided in Appendix C of the 2018 $PM_{2.5}$ Plan, 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).[152]

SCAQMD Rule 1146 establishes a 5 ppm NO_X emission limit for larger units (*i.e.,* those with heat 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.[153] 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.[154] Because SCAQMD Rule 1146 allows individual units with rated heat inputs above 75 MMBtu/hr to comply with RECLAIM in lieu of compliance with the 5 ppm emission limit in the rule,[155] the SIP-approved NO_X emission limit for these units in the South Coast is either the applicable limit in SCAQMD Rule 1146 or the applicable provision of the RECLAIM program, which may allow for emission levels higher than 5 ppm at individual units.[156] We do not have information

[142] SJVUAPCD Rule 4103, as amended April 15, 2010.

[143] Id.

[144] 77 FR 214 (January 4, 2012).

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

[146] 2018 $PM_{2.5}$ Plan, App. C, C–18 and C–23 to C–29.

[147] SJVUAPCD Rule 4306, as amended October 16, 2008.

[148] 75 FR 1715 (January 13, 2010).

[149] SJVUAPCD Rule 4320, as adopted October 16, 2008.

[150] 76 FR 16696 (March 25, 2011).

[151] 2018 $PM_{2.5}$ Plan, App. C, C–71 to C–79.

[152] Id. and 79 FR 57442 (September 25, 2014) (final action approving Rule 1146 into California SIP). The SCAQMD amended Rule 1146 on December 8, 2018 and CARB submitted the amended rule to the EPA on February 6, 2020. The amended rule is available at *http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1146.pdf?sfvrsn=4.*

[153] 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 2018 $PM_{2.5}$ Plan, App. C, C–73. The SCAQMD's December 8, 2018 amendments to Rule 1146 did not alter the provisions of section (c)(1)(F).

[154] 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. SCAQMD Rule 2000, section (a). The SCAQMD is currently transitioning the RECLAIM program to a command-and-control regulatory structure requiring ''best available retrofit control technology'' as soon as practicable. See, *e.g.,* SCAQMD, Draft Staff Report, ''Proposed Amended Rule 1110.2—Emissions from Gaseous- and Liquid-Fueled Engines, Proposed Amended Rule 1100—Implementation Schedule for NO_X Facilities,'' September 2019, Chapter 1.

[155] SCAQMD Rule 1146, ''Emissions of NO_X from Industrial, Institutional, and Commercial Boilers and Steam Generators, and Process Heaters'' (amended November 1, 2013), Table 1146–1, section (a)(4) and SCAQMD Rule 2001, ''Applicability'' (amended May 6, 2005), section (j) and Table 1.

[156] The EPA's most recent action approving revisions to the RECLAIM program into the California SIP published on September 14, 2017. 82 FR 43176.

about the rated heat input of the units subject to RECLAIM in the South Coast and, therefore, have no information confirming that any unit with a rated heat input above 75 MMBtu/hr has achieved the 5 ppm NO_X emission limit in Rule 1146.

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.[157] Based on its consideration of the technical constraints and costs associated with each of these control options, as explained in Appendix C of the 2018 $PM_{2.5}$ Plan, the District concluded that these additional controls are not feasible for implementation in the San Joaquin Valley at this time.[158]

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.[159]

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.[160] 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.[161] The EPA approved Rule 4311 into the California SIP on November 3, 2011.[162]

The District compared Rule 4311 with several other analogous rules implemented in other parts of California, including the South Coast, Bay Area, and Santa Barbara, all of which require regulated sources to submit FMPs to the local air districts.[163] The District also compared Rule 4311 with North Dakota's Century Code 38–08–06.4, which requires, among other things, that after one year of uncontrolled operations each oil well be equipped with a control system that captures at least 75% of the gas (*i.e.,* allowing up to 25% of the gas to be flared).[164] According to the information provided, the average volume of gas flared at facilities in the San Joaquin Valley between 2009 and 2013 was 3.8%, well below both the amount of flaring allowed under the North Dakota rule and the amount allowed in the Santa Barbara Air Pollution Control District's Rule 359, which requires that each FMP list a targeted maximum monthly flared gas volume of 5% of the average monthly gas handled/produced/treated, with limited exceptions.[165] As described in Appendix C of the 2018 $PM_{2.5}$ Plan, the District concluded that, because of wide variation in flaring operations in the San Joaquin Valley, requirements to submit detailed FMPs, as in Rule 4311, are the most effective means of reducing NO_X emissions from flaring and that additional control techniques are not technologically and economically feasible for implementation in the San Joaquin Valley at this time.[166]

Consistent with a commitment in a prior $PM_{2.5}$ attainment plan to evaluate the technological and economic feasibility of additional flare minimization practices, the District recently conducted a comprehensive evaluation of the most effective flare minimization practices included in approved FMPs and additional NO_X control information and published two reports containing its findings and recommendations.[167] As part of its final report in 2016, the District identified flare minimization practices in use at certain facilities that could be employed at other facilities to reduce flaring and stated its intent to propose potential rule amendments to require use of these practices where technologically and economically feasible.[168] Additionally, the District found that ultra-low NO_X control technologies have recently become available and stated its intent to thoroughly evaluate this control option and to then propose potential rule amendments to require use of these controls where technologically and economically feasible.[169] In the 2018 $PM_{2.5}$ Plan, the District provided a summary economic analysis indicating that the annualized cost-effectiveness of ultra-low NO_X control technology would range from $23,000 to $1 million per ton of NO_X reduced.[170] Finally, the District considered a number of alternatives to flaring, preventative maintenance measures, procedures to reduce flaring during maintenance and shutdowns, and procedures to prevent or mitigate effects of power outages that would further reduce NO_X emissions from this source category.[171]

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.[172] Specifically, the rule establishes NO_X emission limits of 165 parts per million volume (ppmv) for units burning MSW, 90 ppmv for units burning biomass, and 65 ppmv for units burning other solid fuels.[173] The EPA approved the District's 2011 amendments to this rule into the California SIP on November 6, 2012.[174]

As described in Appendix C of the 2018 $PM_{2.5}$ Plan, the NO_X emission limits in Rule 4352 have been lowered significantly over time and are 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 rules implemented in the South Coast Air Quality Management District (SCAQMD) (Rule 1146), Bay Area Air Quality Management District (BAAQMD) (Regulation 9 Rule 7) and Sacramento Metropolitan Air Quality Management District (SMAQMD) (Rule 411) and found that the lower NO_X emission limits in these rules are not comparable to the provisions of Rule 4352. According to the District, all of remaining solid fuel-fired boilers operating in the San Joaquin Valley are used by electric utilities to generate electricity, a category that is specifically exempted from the requirements of SCAQMD Rule 1146, BAAQMD Regulation 9 Rule 7, and SMAQMD

[157] 2018 $PM_{2.5}$ Plan, App. C, C–88 to C–92.

[158] Id.

[159] EPA's BACM/MSM TSD at section 3.b.5.

[160] SJVUAPCD Rule 4311, as amended June 18, 2009.

[161] Id.

[162] 76 FR 68106 (November 3, 2011).

[163] 2018 $PM_{2.5}$ Plan, App. C, C–150 to C–156.

[164] Id. at C–155 and North Dakota Century Code 38–08–06.4, section 2.d (as in effect February 13, 2015), available at *https://www.legis.nd.gov/cencode/t38c08.pdf?20150213153521.*

[165] 2018 $PM_{2.5}$ Plan, C–154 and C–155.

[166] Id. at C–147 to C–148 and C–156 to C–161.

[167] SJVUAPCD, ''Rule 4311 (Flares) Further Study, 2014,'' September 16, 2014 and SJVUAPCD, ''Further Study, Rule 4311 Flare Minimization Plans, 2015,'' March 31, 2016.

[168] SJVUAPCD, ''Further Study, Rule 4311 Flare Minimization Plans, 2015,'' March 31, 2016, 16–17.

[169] Id.

[170] 2018 $PM_{2.5}$ Plan, C–156 and C–157.

[171] Id. at C–157 to C–161.

[172] SJVUAPCD Rule 4352, as amended December 15, 2011.

[173] Id.

[174] 77 FR 66548 (November 6, 2012).

Rule 411.[175] The District also compared Rule 4352 to analogous rules implemented by three other California air districts that apply to active biomass-fueled units, the Yolo-Solano Air Quality Management District (YSAQMD), El Dorado County Air Quality Management District (EDAQMD), and Placer County Air Pollution Control District (PCAPCD), and found that the NO_X emission limits for biomass-fueled units in these regulations are all within the same range as the limits in SJVUAPCD Rule 4352.[176]

The District also considered the technological and economic feasibility of alternative control techniques for this source category, such as selective catalytic reduction (SCR) and ''Covanta LN'' technology for NO_X control and catalytic baghouse filter bags (''Gore De-NO_X systems'') for direct $PM_{2.5}$ control.[177] Based primarily on its consideration of the costs associated with retrofitting these controls onto existing MSW-fired or biomass-fired units, the District concluded in the 2018 $PM_{2.5}$ Plan that none of these control options is economically feasible for sources in the San Joaquin Valley at this time.[178] The District noted, however, that in May 2018 it issued a construction permit requiring installation of Covanta LN technology to limit NO_X emissions from certain MSW-fired units and that it would continue to monitor the implementation of this control technology to determine whether it is feasible for implementation on a continuous basis.[179]

We have reviewed the relevant provisions of BAAQMD Regulation 9–7, SCAQMD Rule 1146 and SMAQMD Rule 411 and agree with the District's conclusion that these SIP-approved regulations exempt from their NO_X emission limits boilers used at electric utilities to generate electricity.[180]

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.[181] 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.[182] The EPA approved the District's 2011 amendments to Rule 4354 into the California SIP on January 31, 2013.[183]

According to information provided in Appendix C of the 2018 $PM_{2.5}$ Plan, 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 for this source category and are at least as stringent as analogous requirements implemented in the South Coast and Bay Area.[184] We are not aware of prohibitory rules for glass melting furnaces in other areas that are more stringent than Rule 4354.

As part of our review of a previous $PM_{2.5}$ attainment plan submitted for the San Joaquin Valley, we also considered whether NO_X emission levels lower than the limits in Rule 4354 may be feasible for container glass manufacturing facilities. Specifically, under the SCAQMD's RECLAIM Program, the SCAQMD determined in 2000 that a NO_X limit of 1.2 lbs NO_X/ton of glass pulled represented Best Available Retrofit Control Technology (BARCT),[185] and in 2015 the SCAQMD determined that a lower NO_X limit of 0.24 lbs NO_X/ton of glass pulled represents BARCT for this source category based on use of SCR or the ''Ultra Cat ceramic filter system,'' which has been installed or is under construction at a number of glass manufacturing locations worldwide.[186] The EPA obtained information from the SCAQMD indicating that the Owens-Brockway Container Glass facility in the South Coast (now operated by Owens-Illinois Glass Company) operated at 90% production capacity in February 2015 and consistently emitted below 0.72 lbs NO_X/ton of glass pulled during that month, using oxyfuel firing to control NO_X emissions.[187]

Given this information, the EPA requested additional information from the District about the technological and economic feasibility of additional NO_X control techniques for container glass manufacturing facilities, and on January 28, 2020, the District submitted a document entitled ''Further Information for EPA Regarding the MSM Analysis for District Rule 4354 (Glass Melting Furnaces)'' (referred to herein as the ''Rule 4354 Additional Analysis'').[188] The information provided by the District indicates that, because the costs due to lost production can be significant if a glass melting furnace is taken off-line during the middle of its campaign, retrofits to install additional combustion controls are generally performed only when a furnace is shut down for rebricking, which occurs once every 10 to 15 years.[189] Because of wide variations in the costs and technical difficulties associated with installation of NO_X controls depending on the physical layout of each furnace and the time of its last re-bricking, the District concluded that generic economic feasibility analyses are not possible and that extensive facility-specific evaluations would be necessary to determine whether additional control technologies are feasible for implementation at the three container glass melting facilities currently operating in the San Joaquin Valley.[190]

Further, the District also stated in Appendix C of the 2018 $PM_{2.5}$ Plan that the Owens-Brockway (now Owens-Illinois) facility in the South Coast has experienced wide-ranging spikes in the NO_X emissions from its glass furnaces while operating its new control systems and that it is not known at this time whether the facility will be able to consistently achieve emission rates as low as 0.20 lbs of NO_X/ton of glass produced as shown by the facility's preliminary source test data from 2018.[191]

We agree with the District's conclusion that the feasibility of retrofits to install additional NO_X controls at the existing glass melting facilities in the San Joaquin Valley is

[175] 2018 $PM_{2.5}$ Plan, App. C, C–165 to C–167.

[176] Id. at C–168 to C–169.

[177] Id. at C–170 to C–179.

[178] Id.

[179] Id. at C–179. The permitted source had not yet begun construction at the time the District adopted the 2018 $PM_{2.5}$ Plan.

[180] BAAQMD Regulation 9–7, section 110.4, SCAQMD Rule 1146, section 110, and SMAQMD Rule 41, section (f)(1).

[181] SJVUAPCD Rule 4354, as amended May 19, 2011.

[182] Id. at 5, 7.

[183] 78 FR 6740 (January 31, 2013).

[184] 2018 $PM_{2.5}$ Plan, App. C, C–189 to C–194.

[185] BARCT is defined as ''an emission limitation that is based on the maximum degree of reduction achievable taking into account environmental, energy, and economic impacts by each class or category of source.'' California Health & Safety Code Section 40406.

[186] SCAQMD, Draft Final Staff Report, ''Proposed Amendments to Regulation XX, Regional Clean Air Incentives Market (RECLAIM), NO_X RECLAIM,'' December 4, 2015, 170–171. The RECLAIM program requires that container glass melting facilities achieve NO_X reductions consistent with the 2015 BARCT determination (0.24 lbs NO_X/ton of glass pulled) by 2022. SCAQMD Rule 2002 (as amended October 5, 2018), subparagraph (f)(1)(K) and Table 6 (''RECLAIM NO_X 2022 Ending Emission Factors'').

[187] 81 FR 69396, 69399 (October 6, 2016) (citing email dated April 13, 2016, from Kevin Orellana, SCAQMD to Idalia Perez, EPA Region IX).

[188] Email dated January 28, 2020, from John Klassen, SJVUAPCD to Doris Lo, EPA Region IX, Subject: ''RE: Follow up questions on glass melting and IC engines for MSM analysis,'' attaching ''Further Information for EPA Regarding the MSM Analysis for District Rule 4354 (Glass Melting Furnaces)'' (''Rule 4354 Additional Analysis'').

[189] Rule 4354 Additional Analysis, 5–7.

[190] Id.

[191] 2018 $PM_{2.5}$ Plan, App. C, C–195.

highly dependent on timing and site-specific factors, as the real costs of installing post-combustion controls or oxy-fuel firing retrofits and the lost revenue resulting from early furnace shutdowns may vary significantly from facility to facility.

Stationary 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.[192] 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.[193] The EPA approved the District's 2013 amendments to this rule into the California SIP on April 25, 2016.[194]

For SI non-AO engines, Rule 4702 establishes NO_X emission limits ranging from 11 to 75 ppmv, depending on the type of engine.[195] According to Appendix C of the 2018 $PM_{2.5}$ Plan, 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.[196] We also note that the Rule 4702 limits for these engines are at least as stringent as analogous requirements in the Feather River, Placer County, Mojave Desert, and San Diego areas.[197]

Some of the emission limits for specific types of 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;[198] 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); [199] and Antelope Valley has adopted a 36 ppmv limit for IC engines (except those used exclusively in agricultural operations).[200] As explained in Appendix C of the 2018 $PM_{2.5}$ Plan, the District considered the technical and economic feasibility of alternative control techniques for certain SI non-AO engines (*e.g.,* waste gas engines, cyclic loaded field gas-fueled engines, limited use engines, two-stroke gaseous fueled engines, and lean-burn engines used in gas compression) that would lower the emission levels for these engines to 11 ppmv but found that these NO_X controls are not feasible for implementation in the San Joaquin Valley at this time.[201]

For SI AO engines, Rule 4702 establishes NO_X emission limits ranging from 90 to 150 ppmv.[202] 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.[203] The SCAQMD, however, has adopted an 11 ppmv NO_X emission limit for all stationary SI and CI engines rated over 50 bhp, effective July 1, 2011, with limited exceptions for agricultural engines that meet certain conditions.[204] Additionally, the Feather River Air Quality Management District (FRAQMD) Rule 3.22, as amended October 6, 2014, establishes NO_X emission limits of 25 parts per million (ppm) and 65 ppm for rich-burn and lean-burn agricultural engines in southern FRAQMD, respectively, except for engines located at agricultural sources that emit less than 50% of the major source thresholds for regulated air pollutants and/or hazardous air pollutants.[205] These NO_X emission limits in SCAQMD Rule 1110.2 and FRAQMD Rule 3.22 thus appear to be more stringent in some respects than the 90 ppmv and 150 ppmv limits applicable to agricultural engines in SJVUAPCD Rule 4702. As of June 2016, staff at the FRAQMD were unaware of any stationary SI engines currently operating at agricultural facilities in the Feather River area that have demonstrated compliance with the 25 ppm or 65 ppm NO_X emission limits in FRAQMD Rule 3.22.[206] Nonetheless, because these NO_X emission limits are approved into the California SIP,[207] they are required as MSM if they can feasibly be implemented in the San Joaquin Valley.

The District considered the technical and economic feasibility of alternative control techniques for SI AO engines that would lower the emission levels for certain engines to 11 ppmv but found that these NO_X controls are not feasible for implementation within San Joaquin Valley's agricultural industry at this time.[208] Based on our understanding that three natural gas-fired SI AO engines in the South Coast are currently subject to the 11 ppmv NO_X emission limit in SCAQMD Rule 1110.2 and use nonselective catalytic reduction (NSCR, also called ''three-way catalysts'') control technology to comply with this emission limit,[209] the EPA requested additional information from the District regarding the technological and economic feasibility of additional NO_X control techniques for SI AO engines, and on October 7, 2019, the District submitted a document entitled ''Further Information for EPA Regarding the MSM Analysis for Agricultural Operation Engines'' (referred to herein as the ''AO Engine Additional Analysis'').[210]

[192] SJVUAPCD Rule 4702, as amended November 14, 2013.

[193] Id.

[194] 81 FR 24029 (April 25, 2016).

[195] SJVUAPCD Rule 4702, as amended November 14, 2013, section 5.2.2 and tables 1 and 2.

[196] 2018 $PM_{2.5}$ Plan, App. C, C–214 to C–221.

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

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

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

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

[201] 2018 $PM_{2.5}$ Plan, App. C, C–221 to C–227.

[202] SJVUAPCD Rule 4702, as amended November 14, 2013, section 5.2.3 and Table 3.

[203] 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.

[204] SCAQMD Rule 1110.2, as amended February 1, 2008, section (d)(1) (referencing Tables I and II). Rule 1110.2 provides an exemption from the 11 ppmv emission limit for agricultural engines that meet EPA Tier 4 emission standards and either of two additional conditions: (1) The engine operator submits documentation to the SCAQMD, by the deadline for a permit application, that the applicable electric utility has rejected an application for an electrical line extension to the location of the engines, or (2) the SCAQMD determines that the operator does not qualify for funding under California Health and Safety Code Section 44229 to replace, retrofit or repower the engine. SCAQMD Rule 1110.2 at section (h)(9).

[205] FRAQMD Rule 3.22, as amended October 6, 2014, section D.1, Table 2 (South FRAQMD Emission Limits) and section B.1.e (Exemptions).

[206] Email dated June 2, 2016, from Alamjit Mangat, FRAQMD to Nicole Law, EPA Region IX, regarding ''Engines in FRAQMD'' (stating that all 423 agricultural engines currently operating in the Feather River area qualify for an exemption from the NO_X emission limits in FRAQMD Rule 3.22). The 25 ppm and 65 ppm NO_X emission limits in SIP-approved Rule 3.22 apply only to engines located at agricultural sources that emit at least 50% of the major source thresholds for regulated air pollutants and/or hazardous air pollutants. FRAQMD Rule 3.22, as amended October 6, 2014, section D.1, Table 2 (South FRAQMD Emission Limits) and section B.1.e (Exemptions).

[207] 80 FR 22646 (April 23, 2015) (final rule approving FRAQMD Rule 3.22 into California SIP).

[208] 2018 $PM_{2.5}$ Plan, App. C, C–231 to C–238.

[209] 81 FR 69396, 69398 (October 6, 2016) (citing email dated May 3, 2016, from Kevin Orellana, SCAQMD to Nicole Law, EPA Region IX).

[210] Email dated October 7, 2019, from John Klassen, SJVUAPCD to Doris Lo, EPA Region IX,

Continued

According to the District, the NO_X controls that would be necessary to achieve a 11 ppmv emission limit at SI AO engines in the San Joaquin Valley are not economically feasible because of factors such as increased fuel costs, increased engine maintenance costs, and the costs of engine overhaul/replacement,[211] and installation of control equipment on an SI AO engine generally is not technologically feasible without substantial and costly engine retrofits.[212] The AO Engine Additional Analysis explains the District's cost-effectiveness calculations.[213] The District also provided information regarding technical feasibility challenges related to the specific type of workforce, and physical size and location of agricultural operations in the San Joaquin Valley.

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.[214]

Finally, for compression-ignited IC engines (both those used in agricultural operations and those used in non-agricultural operations), Rule 4702 requires compliance by specified dates with EPA Tier 3 or Tier 4 NO_X emission standards for non-road CI engines in 40 CFR part 89 or part 1039, as applicable, or an 80 ppmv NO_X emission limit, depending on engine type.[215]

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.[216] 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.[217] The EPA approved this rule into the California SIP on February 14, 2006.[218]

According to Appendix C of the 2018 $PM_{2.5}$ Plan, Rule 4550 was the first rule of its kind in the nation to reduce fugitive particulate emissions from agricultural operations through implementation of conservation practices.[219] The District compared the provisions of Rule 4550 to analogous regulations implemented by air agencies in other parts of California (Imperial County and South Coast) and in Arizona, and found that Rule 4550 is at least as stringent as each of these other regulations.[220] 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 2018 $PM_{2.5}$ Plan states that additional CMPs and other controls for windblown dust would not substantially impact $PM_{2.5}$ design values in the San Joaquin Valley because windblown dust events typically do not coincide with the winter period during which $PM_{2.5}$ concentrations in the San Joaquin Valley are the highest.[221] According to the District, $PM_{2.5}$ design values in the San Joaquin Valley are driven primarily by high winter-time concentrations, mostly due to organic carbon and the secondary formation of ammonium nitrate, while the geologic component of peak $PM_{2.5}$ concentrations is a fraction (less than 6%) of the mass formed by secondary processes and other sources.[222] Additionally, the District states that $PM_{2.5}$ comprises a small fraction (approximately 6% to 12%) of total PM_{10} emissions from agricultural field operations in the San Joaquin Valley.[223]

Commercial Charbroiling

SJVUAPCD Rule 4692 (''Commercial Charbroiling''), as amended September 17, 2009, establishes control requirements to reduce PM_{10} (including $PM_{2.5}$) and VOC emissions from chain-driven charbroilers.[224] 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.[225] The rule does not require controls for under-fired charbroilers (UFCs). The EPA approved the District's 2009 amendments to Rule 4692 into the California SIP on November 3, 2011.[226]

Appendix C of the 2018 $PM_{2.5}$ Plan includes a comparison of the requirements in Rule 4692 to analogous requirements for chain-driven charbroilers implemented by the SCAQMD, Ventura County Air Pollution Control District (VCAPCD), BAAQMD, and New York Department of Environmental Protection (NYDEP) and found no requirements for chain-driven charbroilers in these rules that are more stringent than those contained in Rule 4692.[227] With respect to UFCs, the District noted that two regulations, the BAAQMD's Regulation 6 Rule 2 and title 24, section 24–149.4 of the New York City Administrative Code, contain control requirements for UFCs. According to the District, however, the majority of the UFCs in the Bay Area are not subject to the requirements for UFCs in BAAQMD Regulation 6 Rule 2 because they fall below the rule's applicability thresholds, and the BAAQMD has not enforced its UFC requirements because no control technologies have yet been certified.[228] Similarly, the District states in Appendix C of the 2018 $PM_{2.5}$ Plan that NYDEP staff are in the introductory stages of establishing an inventory and planning for inspections at charbroiling facilities, and that installation of controls for new UFCs is not yet required under title 24, section 24–149.4 of the New York City Administrative Code.[229] The SJVUAPCD therefore concluded that control requirements for UFCs are not technologically and economically feasible at this time.

We are not aware of requirements for chain-driven charbroilers in other areas that are more stringent than the requirements of Rule 4692. Although the BAAQMD and NYDEP implement rules that require controls for UFCs, neither agency has yet confirmed that any regulated sources have successfully installed and operated certified UFC control technologies.[230] Staff at the

Subject: ''RE: Follow up questions on glass melting and IC engines for MSM analysis,'' attaching ''Further Information for EPA Regarding the MSM Analysis for Agricultural Operation Engines'' (''AO Engine Additional Analysis'').

[211] AO Engine Additional Analysis, 9–12.

[212] Id. at 10–11.

[213] Id. at 9–11.

[214] SCAQMD Final Staff Report for Rule 1110.2, May 2005, App. B (''Incentive Funding Available for Agricultural Engine Emission Reductions'').

[215] SJVUAPCD Rule 4702, as amended November 14, 2013, section 5.2.4, Table 4, and section 3.37 (defining Tier 1, Tier 2, Tier 3, and Tier 4 engines).

[216] SJVUAPCD Rule 4550, as adopted August 19, 2004.

[217] Id.

[218] 71 FR 7683 (February 14, 2006).

[219] 2018 $PM_{2.5}$ Plan, App. C, C–196.

[220] Id. at C–202, C–203.

[221] Id. at C–200, C–201.

[222] Id. at C–201.

[223] Id. at C–200.

[224] SJVUAPCD Rule 4692, as amended September 17, 2009.

[225] Id.

[226] 76 FR 68103.

[227] 2018 $PM_{2.5}$ Plan, App. C, C–205 to C–208.

[228] Id. at C–206. We note that the BAAQMD and NYDEP charbroiler rules have not been approved into the California SIP and New York SIP, respectively.

[229] Id.

[230] Email dated July 11, 2019, from Stanley Tong, EPA Region IX to Krishnan Balakrishnan, BAAQMD, Subject: ''Underfired charbroiler updates'' and email dated June 17, 2019, from Ronald Vaughn, NYDEP to Stanley Tong, EPA Region IX, Subject: ''RE New Charbroiler Registrations NYC.''

BAAQMD recently noted that electrostatic precipitators (ESPs) have been installed in commercial kitchens in San Francisco and San Jose but that the BAAQMD has not yet enforced control requirements for UFCs.[231] We note that the 2018 $PM_{2.5}$ Plan identifies several restaurants inside and outside of the San Joaquin Valley that have installed UFC control technologies, and that these installations may inform the District's ongoing feasibility analyses.[232] For example, the District has implemented a first-of-its-kind pilot project to install and assess the feasibility of UFC controls at an operating restaurant.[233] We encourage the District to continue monitoring the operation of these control technologies to determine whether they can feasibly be implemented at other charbroiling sources in the San Joaquin Valley.

The District revised Rule 4692 on June 21, 2018, to require owners and operators of commercial cooking operations with UFCs to submit, by January 1, 2019, a one-time informational report providing information about the UFC and its operations—including, *e.g.,* information about the cooking surface area, type and quantity of meat cooked on the UFC on a weekly basis during the previous 12-month period, daily operating hours, and the manufacturer and model number of any installed pollution control device designed to reduce particulates, kitchen smoke, or odor.[234] The revisions to Rule 4692 also require such owners and operators to register with the District and keep weekly records relating to the quantity of meat cooked, but exempt from the registration and recordkeeping requirements UFCs that cook quantities of meat below certain thresholds provided the owner or operator complied with the one-time informational reporting requirement. CARB submitted the amended rule to the EPA on November 21, 2018, via a letter dated November 16, 2018.[235]

Stationary Gas Turbines

SJVUAPCD Rule 4703 (''Stationary Gas Turbines''), as amended September 20, 2007, establishes NO_X emission limits and related operational requirements for stationary gas turbines with greater than 0.3 MW capacity or a maximum heat input rating of more than 3 million Btu/hr.[236] The NO_X emission limits in the rule range from 3 to 25 ppm for gas-fired operations and from 25 to 42 ppm for liquid-fired operations.[237] These units operate primarily in the oil and gas production and utility industries, with some also operating in manufacturing and government facilities.[238] The EPA approved this rule into the California SIP on October 21, 2009.[239]

According to information provided in Appendix C of the 2018 $PM_{2.5}$ Plan, the NO_X emission limits in Rule 4703 are at least as stringent as analogous control requirements implemented in the Bay Area, South Coast, and Ventura County.[240] We note that the SCAQMD recently revised its rule for stationary gas turbines (Rule 1134) to establish, among other things, a NO_X emission limit of 2 ppmv for natural gas-fired combined cycle turbines, which is more stringent than the 3 ppmv limit in SJVUAPCD Rule 4703 for these units.[241] Because the compliance date for this requirement in SCAQMD Rule 1134 is December 31, 2023, however, it is not clear that the controls necessary to achieve a 2 ppmv emission level are technologically and economically feasible at this time.

Wood Burning Fireplaces and Wood Burning Heaters

SJVUAPCD Rule 4901 (''Wood Burning Fireplaces and Wood Burning Heaters''), as amended June 20, 2019, 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 San Joaquin Valley. The EPA proposed to approve the District's 2019 amendments to the rule into the SIP on January 9, 2020.[242]

As part of the evaluation supporting our proposed approval,[243] we found that Rule 4901 and the related Check Before You Burn program (*http://valleyair.org/rule4901*) implemented by the District provide for a comprehensive residential wood smoke program that incorporates all of the elements outlined in EPA's ''Strategies for Reducing Wood Smoke.'' [244] Among the key elements of the rule are a wood burning curtailment program (triggered by forecasted $PM_{2.5}$ concentrations for the next day), opacity and visible emission limits, requirements regarding wood moisture content, removal of uncertified wood burning stoves upon home resale, restrictions on installation of wood burning devices, requirement that all wood burning stoves sold or transferred within the District meet New Source Performance Standards (NSPS), a wood burning change-out program and education and outreach. In the Technical Support Document to support our separate proposal on Rule 4901, we compare this rule to analogous rules implemented elsewhere and conclude that Rule 4901, as a whole, is as or more stringent than analogous local, state, and federal rules and guidance.[245]

Of particular relevance for reducing $PM_{2.5}$ emissions, Rule 4901 includes a tiered mandatory curtailment program that establishes different curtailment thresholds based on the type of device and county. During a level one episodic woodburning curtailment, operation of wood burning fireplaces and unregistered wood burning heaters is prohibited, but properly operated, registered [246] wood burning devices may be used. During a level two episodic woodburning curtailment, operation of any wood burning device is prohibited. However, the rule includes an exemption from the curtailment provisions for (1) locations where natural gas service is not available and (2) residences for which a wood burning

[231] Email dated January 9, 2020, from Virginia Lau, BAAQMD to Stanley Tong, EPA Region IX, Subject: ''RE: Underfired charbroiler—Q: SJ discussion about BA rule'' (noting that the BAAQMD has conducted enforcement inspections concerning food throughput and grill size).

[232] 2018 $PM_{2.5}$ Plan, App. C, C–209.

[233] Id. at App. E, E–20.

[234] SJVUAPCD Rule 4692, as amended June 21, 2018. The revisions to Rule 4692 provide that commercial cooking operations with UFCs that are operated outdoors and are not connected to an exhaust hood or other form of ventilation system are exempt from the requirements of the rule. Id. at sections 3.9 and 4.3.

[235] Letter dated November 16, 2018, from Richard W. Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region IX (transmitting amended Rule 4692).

[236] SJVUAPCD Rule 4703, as amended September 20, 2007.

[237] Id. at Table 5–3.

[238] 2018 $PM_{2.5}$ Plan, App. C, C–243 to C–247.

[239] 74 FR 53888 (October 21, 2009).

[240] 2018 $PM_{2.5}$ Plan, App. C, C–243 to C–247.

[241] SCAQMD Rule 1134, as amended April 5, 2019, section (d) and table I (''Emission Limits for Stationary Gas Turbines'').

[242] 85 FR 1131 (January 9, 2020).

[243] Technical Support Document for the EPA's Proposed Rulemaking for the California State Implementation Plan, San Joaquin Valley Unified Air Pollution Control District Rule 4901 (''Wood Burning Fireplaces and Wood Burning Heaters''), December 2019.

[244] Strategies for Reducing Wood Smoke, EPA–456/B–13–01, March 2013.

[245] Id. The SJVUAPCD provides its comparisons of Rule 4901 to analogous rules implemented elsewhere in Appendix C of the Plan. 2018 $PM_{2.5}$ Plan, App. C, C–259 to C–280.

[246] In order to be registered, a device must either be certified under the NSPS at time of purchase or installation and at least as stringent as Phase II requirements or be a pellet-fueled wood burning heater exempt from EPA certification requirements at the time of purchase or installation. The rule includes requirements for documentation and inspection to verify compliance with these standards.

fireplace or wood burning heater is the sole available source of heat. In the ''hot spot'' counties of Madera, Fresno, and Kern, the level one $PM_{2.5}$ threshold is 12 μg/m^3, and the level two $PM_{2.5}$ threshold is 35 μg/m^3. In the remaining counties in the District (San Joaquin, Stanislaus, Merced, Kings, and Tulare), the level one $PM_{2.5}$ threshold is 20 μg/m^3, and the level two $PM_{2.5}$ threshold is 65 μg/m^3. These curtailment thresholds in Rule 4901 are collectively as stringent as or more stringent than those in any other rule.

b. State Measures for Mobile Sources

Mobile source categories for which CARB has primary responsibility for reducing emissions in California include most new and existing on- and non-road engines and vehicles and motor vehicle fuels. The 2018 $PM_{2.5}$ Plan's BACM and MSM demonstration provides a general description of CARB's key mobile source programs and regulations and a comprehensive table listing on-road and non-road mobile source regulatory actions taken by CARB since 1985.[247] Given the need for substantial emissions reductions from mobile sources to meet the NAAQS in California's nonattainment areas, CARB has established stringent control measures for on-road and non-road mobile sources and the fuels that power them. California has unique authority under CAA section 209 (subject to a waiver by the EPA) to adopt and implement new emission standards for many categories of on-road vehicles and engines, and new and in-use non-road vehicles and engines. The EPA has approved such mobile source regulations for which waiver authorizations have been issued as revisions to the California SIP.[248]

CARB's mobile source program extends beyond regulations that are subject to the waiver or authorization process set forth in CAA section 209 to include standards and other requirements to control emissions from in-use heavy-duty trucks and buses, gasoline and diesel fuel specifications, and many other types of mobile sources. Generally, these regulations have also been submitted and approved as revisions to the California SIP.[249]

During its development of the Valley State SIP Strategy, CARB identified measures that would achieve additional NO_X and direct $PM_{2.5}$ emissions reductions from sources under CARB jurisdiction, including more stringent in-use performance standards for heavy-duty vehicles, a low-NO_X engine standard for vehicles with new heavy-duty engines, and a low-emission diesel fuel requirement.[250] The Valley State SIP Strategy includes a commitment by CARB to bring a list of defined measures to the Board for action according to the schedule provided in Table 7 of the Valley State SIP Strategy.[251]

We find that the process conducted by CARB to develop the Valley State SIP Strategy was reasonably designed to identify additional available measures within CARB's jurisdiction, and that CARB's programs constitute the most stringent emission control programs currently available for the mobile source and fuels categories, taking into account economic and technological feasibility.

c. Local Jurisdiction Transportation Control Measures (TCMs)

TCMs are projects that reduce air pollutants from transportation sources by reducing vehicle use, traffic congestion, or vehicle miles traveled. TCMs are currently being implemented in the San Joaquin Valley as part of the Congestion Mitigation and Air Quality cost effectiveness policy adopted by the eight local jurisdiction MPOs and in the development of each Regional Transportation Plan (RTP). The Congestion Mitigation and Air Quality policy, which is included in a number of the District's prior attainment plan submissions for the ozone and $PM_{2.5}$ NAAQS, provides a standardized process for distributing 20 percent of the Congestion Mitigation and Air Quality funds to projects that meet a minimum cost effectiveness threshold beginning in fiscal year 2011. The MPOs revisited the minimum cost effectiveness standard during the development of their 2018 RTPs and 2019 Federal Transportation Improvement Program and concluded that they were implementing all reasonable transportation control measures.[252] Appendix D of the District's ''2016 Ozone Plan for 2008 8-Hour Ozone Standard,'' adopted June 16, 2016, contains a listing of adopted TCMs for the San Joaquin Valley.[253]

d. Conclusion and Proposed Action

We find that the evaluation process followed by CARB and the District in the SJV $PM_{2.5}$ Plan to identify potential BACM and MSM were generally consistent with the requirements of the $PM_{2.5}$ SIP Requirements Rule, the State's and District's evaluation of potential measures is appropriate, and the State and District have provided reasoned justifications for their rejection of potential measures based on technological or economic infeasibility. We also agree with the District's conclusion that all reasonable TCMs are being implemented in the San Joaquin Valley and propose to find that these TCMs implement BACM and MSM for transportation sources.

For the foregoing reasons, we propose to find that the SJV $PM_{2.5}$ Plan provides for the implementation of BACM for sources of direct $PM_{2.5}$ and NO_X as expeditiously as practicable and no later than December 31, 2019, and for the implementation of MSM for such sources as expeditiously as practicable and no later than December 31, 2023, in accordance with the requirements of CAA sections 189(b)(1)(B) and 188(e).

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

In this section of the preamble, we present our evaluation of the State's request to extend the Serious area attainment date from December 31, 2019, to December 31, 2024, under CAA section 188(e) and, given the section 188(e) requirement to demonstrate expeditious attainment of the NAAQS, our evaluation of the SJV $PM_{2.5}$ Plan's attainment demonstration, including the Plan's air quality modeling approach and results and control strategy.

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

a. Summary of State's Impracticability Demonstration

The SJV $PM_{2.5}$ Plan includes a demonstration, based on air quality modeling, that even with the implementation of BACM and BACT for all appropriate sources, attainment by December 31, 2019, is not practicable. The impracticability demonstration is included in Appendix K of the 2018 $PM_{2.5}$ Plan.

[247] 2018 $PM_{2.5}$ Plan, App. D, Table 17.

[248] See, *e.g.,* 81 FR 39424 (June 16, 2016), 82 FR 14447 (March 21, 2017), and 83 FR 23232 (May 18, 2018).

[249] See, *e.g.,* the EPA's approval of standards and other requirements to control emissions from in-use heavy-duty diesel-powered trucks, at 77 FR 20308 (April 4, 2012), revisions to the California on-road reformulated gasoline and diesel fuel regulations at 75 FR 26653 (May 12, 2010), and revisions to the California motor vehicle inspection and maintenance program at 75 FR 38023 (July 1, 2010).

[250] Valley State SIP Strategy, Chapter 2 (''Measures''), 2018 $PM_{2.5}$ Plan, section 4.4 and App. D, Chapter IV (''Identification and Evaluation of Potential Measures'').

[251] CARB Resolution 18–49 (October 25, 2018), 5.

[252] 2018 $PM_{2.5}$ Plan, App. D, D–127.

[253] Id. and SJVUAPCD, ''2016 Ozone Plan for 2008 8-Hour Ozone Standard'' (adopted June 16, 2016), App. D, Attachment D, tables D–10 through D–17.

Table 26 in Appendix K presents base year and modeled 2020 future year 24-hour average $PM_{2.5}$ concentrations at 15 $PM_{2.5}$ monitoring sites in the San Joaquin Valley nonattainment area. The demonstration is summarized in Table 3.

TABLE 3—IMPRACTICABILITY DEMONSTRATION, 24-HOUR AVERAGE $PM_{2.5}$ DESIGN VALUE CONCENTRATIONS

[μg/m³]

Monitoring Site	2013 (base year)	2020 (projected future year)
Bakersfield—California	64.1	47.6
Fresno—Garland	60.0	44.3
Hanford	60.0	43.7
Fresno—Hamilton & Winery	59.3	45.6
Clovis	55.8	41.1
Visalia	55.5	42.8
Bakersfield—Planz	55.5	41.2
Madera	51.0	38.9
Turlock	50.7	37.8
Modesto	47.9	35.8
Merced—Main Street	46.9	32.9
Stockton	42.0	33.5
Merced—S Coffee	41.1	30.0
Manteca	36.9	30.1
Tranquility	29.5	21.5

Source: 2018 $PM_{2.5}$ Plan, Appendix K, Table 26.

b. EPA's Evaluation and Proposed Action

The impracticability demonstration in the SJV $PM_{2.5}$ Plan is based on air quality modeling that is generally consistent with applicable EPA guidance. We find the modeling, described in section IV.D.4.a of this preamble, adequate to support the impracticability demonstration in the Plan. We note that the modeled year of the impracticability demonstration is 2020, the year following the December 31, 2019 attainment date. However, as the projected 24-hour average concentration in 2020 is 48 μg/m³, well above the 35 μg/m³ level of the 2006 24-hour $PM_{2.5}$ NAAQS, we find it reasonable to conclude based on this evaluation that attainment by the end of 2019 is impracticable.

In addition to the information in the 2018 $PM_{2.5}$ Plan, we have reviewed recent $PM_{2.5}$ monitoring data from the San Joaquin Valley. These data show that 24-hour average $PM_{2.5}$ levels in the San Joaquin Valley, with a 2016–2018 design value of 65 μg/m³, continue to be above the 35 μg/m³ level of the 2006 24-hour $PM_{2.5}$ standard. Recent trends in annual $PM_{2.5}$ levels in the San Joaquin Valley are not consistent with a projection of attainment by the end of 2019. A more detailed analysis, including 24-hour $PM_{2.5}$ trend data in the San Joaquin Valley for years 2004–2018, is contained in section II of the EPA's General Evaluation TSD.[254]

We discuss in section IV.C of this proposed rule our evaluation of the BACM and BACT demonstration and the bases for our proposal to find that the SJV $PM_{2.5}$ Plan provides for the implementation of all BACM and BACT by the statutory implementation deadline. Based on our evaluation of the State's impracticability demonstration, including the demonstration concerning BACM and BACT, and our review of the available ambient air quality data, we propose to approve the State's demonstration in the 2018 $PM_{2.5}$ Plan that attainment of the 2006 24-hour $PM_{2.5}$ NAAQS in the San Joaquin Valley by the Serious area attainment date of December 31, 2019, is impracticable.

2. 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 the San Joaquin Valley, the EPA has approved the control measure requirements and commitments of the 2008 $PM_{2.5}$ Plan (for the 1997 $PM_{2.5}$ NAAQS) and the 2012 $PM_{2.5}$ Plan and Supplement (for the 2006 $PM_{2.5}$ NAAQS) into the California SIP. The EPA has not yet taken action on the State's SIP revisions for the 2012 $PM_{2.5}$ NAAQS. Therefore, we describe below the State's and District's implementation of the control measures and commitments for the 1997 $PM_{2.5}$ NAAQS and 2006 $PM_{2.5}$ NAAQS. For more detail on our evaluation for the 1997 $PM_{2.5}$ NAAQS, please refer to section III of the EPA's General Evaluation TSD.

a. Requirements and Commitments for the 1997 $PM_{2.5}$ NAAQS

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,[255] which we refer to collectively as the ''2008 $PM_{2.5}$ Plan.'' On November 9, 2011, the EPA approved most elements of the 2008 $PM_{2.5}$ Plan, including commitments by CARB and the SJVUAPCD to take specific actions with respect to identified control measures and to achieve specific amounts of direct $PM_{2.5}$, NO_X, and SO_X emission reductions by 2014.[256]

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 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

[254] See also, Attachment A to the EPA's General Evaluation TSD, ''Practicability of San Joaquin Valley Attaining 2006 24-hour $PM_{2.5}$ NAAQS by December 31, 2019,'' October 9, 2019.

[255] 76 FR 69896, n. 2 (November 9, 2011).

[256] 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*).

Report''), in accordance with the timetable specified therein; [257]

(2) 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 amended June 17, 2010, and to submit these rules and measures to CARB for transmittal to EPA as SIP revisions; [258]

(3) 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; [259] and

(4) 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.[260]

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, CARB had proposed action on six of the seven measures it had committed to propose for Board consideration, leaving one additional measure that was scheduled for proposal in 2013 (''New Emissions Standards for Recreational Boats''). [261] The District had adopted 12 of the 13 measures it had committed to adopt and implement, leaving one additional measure that was scheduled for adoption in 2014, amendments to Rule 4905 (''Natural Gas-Fired, Fan-Type Central Furnaces''). [262] Finally, together CARB and the SJVUAPCD 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. [263]

Subsequently, CARB submitted a staff report, entitled ''Review of San Joaquin Valley $PM_{2.5}$ State Implementation Plan'' (''2015 CARB Compliance Demonstration''), that contains CARB'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. [264] First, on January 22, 2015, the District adopted amendments to Rule 4905 and on April 7, 2015, CARB submitted this rule to the EPA as a revision to the California SIP. [265] 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-Ignition Marine Watercraft.'' [266] These State and District rulemaking actions satisfied the last remaining control measure commitments in the 2008 $PM_{2.5}$ Plan. All of these measures have been submitted to the EPA and approved into the California SIP, as summarized in Table III–A of EPA's General Evaluation TSD.

With respect to the remaining emission reduction commitments (also called ''aggregate tonnage commitments''), the 2015 CARB Compliance Demonstration, as amended by CARB's ''Technical Clarifications to the 2015 San Joaquin Valley $PM_{2.5}$ State Implementation Plan'' (''Technical Clarifications''), identifies nine State and District control measures that, according to CARB, achieved emission reductions beyond those already credited towards the 2008 $PM_{2.5}$ Plan and satisfy the State's remaining 2014 emission reduction obligations. [267] We have reviewed the State's demonstration with respect to each of these nine measures and propose to find that all but one achieved emission reductions that may be credited towards the remaining 2014 emission reduction obligation, because the State has adequately documented its bases for concluding that each measure either contains enforceable, SIP-approved requirements or otherwise achieved specified amounts of emission reductions by January 1, 2014. The one measure identified in the 2015 CARB Compliance Demonstration that did not achieve any SIP-creditable emission reductions is the District's Rule 9510 (''Indirect Source Review''). [268] The EPA's General Evaluation TSD contains a more detailed evaluation of each of the eight measures that we are proposing to credit toward the emission reduction commitments in the 2008 $PM_{2.5}$ Plan.

According to the 2015 CARB Compliance Demonstration and Technical Clarifications, implementation of these control measures achieved, by the beginning of 2014, 26.4 tpd of additional NO_X emission reductions and 2.1 tpd of direct $PM_{2.5}$ emission reductions beyond those already credited toward the 2008 $PM_{2.5}$ Plan. [269] These NO_X emission reductions exceeded the State's outstanding NO_X commitment (12.9 tpd) by 13.9 tpd, and the direct $PM_{2.5}$ emission reductions fell short of the State's outstanding $PM_{2.5}$ commitment (3.0 tpd) by 0.9 tpd. [270] 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 the approximately 13 tpd of surplus NO_X reductions achieved through implementation of the identified State and District measures would adequately cover the 0.9 tpd shortfall in required reductions of direct $PM_{2.5}$. [271]

We find the technical bases for a 9:1 NO_X for direct $PM_{2.5}$ trading ratio are generally sound and therefore propose to use this trading ratio to credit the State with an additional 1.07 tpd of $PM_{2.5}$ emission reduction, rounding to

[257] 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.

[258] 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.

[259] 40 CFR 52.220(c)(356)(ii)(B)(*2*).

[260] 40 CFR 52.220(c)(392)(ii)(A)(*2*).

[261] 76 FR 69896, 69922, Table 2 (''2007 State Strategy Defined Measures Schedule for Consideration and Current Status'').

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

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

[264] CARB, ''Review of San Joaquin Valley $PM_{2.5}$ State Implementation Plan,'' released April 20, 2015 (''2015 CARB Compliance Demonstration''), transmitted by email dated February 5, 2020, from Michael Benjamin, CARB to Meredith Kurpius, EPA Region IX, 17–22 and App. B.

[265] 2015 CARB Compliance Demonstration at 19, Table 7 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 the EPA as California SIP revisions).

[266] 2015 CARB Compliance Demonstration at 20, Table 8 and CARB, Resolution 15–3, ''Evaporative Emissions Control Requirements for Spark-Ignition Marine Watercraft,'' February 19, 2015, available at *http://www.arb.ca.gov/regact/2015/simw2015/simw2015.htm.*

[267] 2015 CARB Compliance Demonstration at 21–22 and CARB, ''Technical Clarifications to the 2015 San Joaquin Valley $PM_{2.5}$ State Implementation Plan,'' transmitted by email dated February 5, 2020, from Michael Benjamin, CARB to Meredith Kurpius, EPA Region IX, 1–4.

[268] The EPA approved SJVUAPCD Rule 9510, as adopted December 15, 2005, into the California SIP on May 9, 2011 but identified a number of concerns about the enforceability of the rule's provisions that the District would need to resolve before relying on this rule for credit in an attainment plan. 76 FR 26609 (May 9, 2011).

[269] 2015 CARB Compliance Demonstration at 21–22 and Technical Clarifications at 1–4.

[270] Id.

[271] Id.

the nearest hundredth (based on 9.63 tpd of ''excess'' NO_X emission reductions) toward its outstanding 2014 commitment.[272]

TABLE 4—2008 $PM_{2.5}$ PLAN AGGREGATE COMMITMENT—EPA PROPOSED EMISSION REDUCTION CREDIT FOR MEASURES IN THE 2015 CARB COMPLIANCE DEMONSTRATION

	Measure	2014 Emission reductions (annual average tpd)	
		NO_X	Direct $PM_{2.5}$
A	Rule 4320 (''Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr'').	1.8	0.0
B	Rule 9510 (''Indirect Source Review'')	0.0	0.0
C	Woodstove Replacements	0.0	0.1
D	District Funded Incentive-Based Emission Reduction Measures	1.5	0.1
E	Rule 9410 (''Employer Based Trip Reduction'')	0.3	0.0
F	Rule 4901 (''Wood Burning Fireplaces and Wood Burning Heaters'')	0.0	1.3
G	State Funded Incentive-Based Emission Reduction Measures [a]	5.0	0.13
H	CARB Cleaner In-Use Heavy Duty Trucks Measure	11.5	0.1
I	CARB Portable Equipment Registration Program (PERP) and Portable Engine ATCM	2.5	0.2
J	TOTAL SIP-Creditable Emission Reductions from State and District Measures (Sum of A through I).	22.6	1.93
K	NO_X to $PM_{2.5}$ Emissions Equivalence at 9:1 Ratio	−9.63	1.07
L	TOTAL Emission Reductions Achieved (J+K)	12.97	3.0

[a] On August 12, 2016, the EPA finalized a limited approval and limited disapproval of CARB's demonstration concerning the emission reductions achieved by the State-Funded Emission Reduction Measure (also referred to as the ''Emission Reduction Report''). 81 FR 53300. As part of that action, the EPA determined that the incentive projects identified in the Emission Reduction Report achieved a total of 4.971 tpd of NO_X emission reductions and 0.134 tpd of direct $PM_{2.5}$ emission reductions by the beginning of 2014, slightly less than the 7.8 tpd of NO_X emission reductions and 0.2 tpd of direct $PM_{2.5}$ emission reductions that CARB had identified in this submission. Id. at 53306.

In sum, the CARB Compliance Demonstration and Technical Clarifications demonstrate that implementation of State and District measures achieved a total of 12.97 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 find that the State has complied with all requirements and commitments pertaining to the San Joaquin Valley nonattainment area in the implementation plan for the 1997 $PM_{2.5}$ NAAQS.

b. Requirements and Commitments for the 2006 $PM_{2.5}$ NAAQS

In 2013 and 2014, California made two SIP submissions to address nonattainment area planning requirements for the 2006 $PM_{2.5}$ NAAQS in the SJV, which we refer to collectively herein as the ''2012 $PM_{2.5}$ Plan and Supplement.'' [273] On August 31, 2016, the EPA approved most elements of the 2012 $PM_{2.5}$ Plan and Supplement into the California SIP.[274] As part of this action, the EPA approved, among other things, commitments by the District to take specific actions with respect to identified control measures and to achieve specific amounts of direct $PM_{2.5}$ emission reductions from these or substitute measures by 2017.[275] The specific District commitments that the EPA approved into the California SIP as part of the 2012 $PM_{2.5}$ Plan and Supplement are as follows:

(1) A commitment by the District to ''adopt and implement the rules and measures in the Plan by the dates specified in Chapter 5'' of the 2012 $PM_{2.5}$ Plan and to submit these rules and measures to CARB within 30 days of adoption for transmittal to the EPA as SIP revisions; and

(2) A commitment by the District to ''achieve the emission reductions shown in Chapter 5'' of the 2012 $PM_{2.5}$ Plan, which are 1.9 tpd of direct $PM_{2.5}$ by 2017, through the rules and measures identified in Chapter 5 of the 2012 $PM_{2.5}$ Plan or through substitute measures.[276]

In Chapter 6, section 6.2 of the 2018 $PM_{2.5}$ Plan (''Compliance with the Applicable SIP''), the District discusses its compliance with these rulemaking and emission reduction commitments as of October 16, 2018, when the Plan was made available for public review.

Table 5 provides the current status of the District's compliance with its rulemaking commitments in the Moderate area plan for the 2006 $PM_{2.5}$ NAAQS. We note that although Table 5 includes specific projected emission reductions associated with two rules, Rule 4692 (''Commercial Charbroiling'') and Rule 4901 (''Wood Burning Fireplaces and Wood Burning Heaters''), the District's emissions reduction commitment was an aggregate commitment that could be met through the identified measures or substitute measures.[277]

[272] For further discussion of our evaluation of the 9:1 NO_X to direct $PM_{2.5}$ trading ratio for purposes of the aggregate commitment, please see section IV of the EPA's General Evaluation TSD.

[273] SJVUAPCD, ''2012 $PM_{2.5}$ Plan,'' December 20, 2012 (''2012 $PM_{2.5}$ Plan'') and SJVUAPCD, ''Supplemental Document, Clean Air Act Subpart 4: The 2012 $PM_{2.5}$ Plan for the 2006 $PM_{2.5}$ Standard and District Rule 2201 (New and Modified Stationary Source Review),'' September 18, 2014 (''Supplement'').

[274] 81 FR 59876 (August 31, 2016).

[275] 40 CFR 52.220(c)(478)(ii)(A)(*3*) and SJVUAPCD Governing Board Resolution 2012–12–19 (December 20, 2012). See also 81 FR 59876, 59893, Table 5. CARB did not make any separate commitments in this SIP submission. CARB Resolution 13–2 (adopting the 2012 $PM_{2.5}$ Plan) and CARB Resolution 14–37 (adopting the Supplement).

[276] Id.

[277] 40 CFR 52.220(c)(478)(ii)(A)(*3*).

TABLE 5—EPA REVIEW OF THE SAN JOAQUIN VALLEY 2012 $PM_{2.5}$ PLAN'S SPECIFIC SJVUAPCD COMMITMENTS TO ADOPT OR AMEND RULES

Rule Number (Title)	District Commitment			District Action	
	Amendment year	Compliance year	Emission reductions	Amendment date	Notes
Rule 4308 (''Boilers, Steam Generators, and Process Heaters 0.075 to <2 MMBtu/hr'').	2013	2015	TBD	November 14, 2013	EPA approval, 80 FR 7803 (February 12, 2015).
Rule 4692 (''Commercial Charbroiling'').	2016	2017	0.4 tpd direct $PM_{2.5}$.	June 21, 2018	Submitted to the EPA November 21, 2018; Amended rule does not establish control requirement for under-fired commercial charbroilers.
Rule 4901 (''Wood Burning Fireplaces and Wood Burning Heaters'').	2016	2016/2017	1.5 tpd direct $PM_{2.5}$.	September 18, 2014	EPA approval, 81 FR 69393 (October 6, 2016).
Rule 4905 (''Natural Gas-Fired, Fan-Type Residential Central Furnaces'').	2014	2015	TBD	January 22, 2015	EPA approval, 81 FR 17390 (March 29, 2016).
Rule 9610 (''SIP-creditability of Incentives'').	2013	2013	TBD	June 20, 2013	EPA limited approval and limited disapproval, 80 FR 19020 (April 9, 2015).

Source: 2012 $PM_{2.5}$ Plan (for the 2006 $PM_{2.5}$ NAAQS), Chapter 5, Table 5–3 (''Regulatory Control Measure Commitments'').

In sum, the District has adopted and submitted to the EPA all five of the regulatory measures specified in Chapter 5 of the 2012 $PM_{2.5}$ Plan that it had committed to adopt and implement by specified dates. Based on our review of this information, we propose to find that the District has satisfied all of its rulemaking commitments in the 2012 $PM_{2.5}$ Plan and Supplement.

With respect to the District's aggregate tonnage commitment to achieve 1.9 tpd of direct $PM_{2.5}$ by 2017, the District states that measures adopted after the State's adoption of the 2012 $PM_{2.5}$ Plan achieved emission reductions in excess of those committed to in the 2012 $PM_{2.5}$ Plan and Supplement.[278] Specifically, the District states that its commitment has been achieved through amendments to Rule 4901 (''Wood Burning Fireplaces and Wood Burning Heaters'').[279] We have reviewed the District's and CARB's explanations of how the District fulfilled this commitment through implementation of revisions to its residential wood burning rule during the relevant time period.[280]

The District has amended Rule 4901 several times since its original adoption in 2003. As of the date the District adopted the 2012 $PM_{2.5}$ Plan, the October 16, 2008 amendment to Rule 4901 applied and the District committed to further amend the rule. The District further amended the rule on September 18, 2014, and the amended rule took effect in the November 2014–February 2015 period. The District's staff report for the 2014 amendment to Rule 4901 projected that the amendment would achieve 24-hour winter-season average emission reductions by 2018 of 2.2 tpd of direct $PM_{2.5}$.[281] The EPA approved this rule into the SIP on October 6, 2016.[282] In our final action, we noted that the District had projected that the rule revision would achieve 3.27 tpd of direct $PM_{2.5}$ reductions during November through February (120-day) (equivalent to a winter-season average reduction of 2.2 tpd).[283] This approval did not include an evaluation of whether the rule had achieved any particular level of emissions reductions, or whether the District had fulfilled its commitment to achieve 1.9 tpd of emissions reductions through revisions to Rule 4901.

We note that the 2018 $PM_{2.5}$ Plan included updated emissions inventories for this source category.[284] Consistent with CAA section 172(c)(3), which requires nonattainment plans to include inventories that are ''comprehensive, accurate, [and] current,'' attainment plans often include updated emission inventories that rely on information developed since an earlier plan. The 2018 $PM_{2.5}$ Plan's updated emission inventories for wood burning devices may be relevant to a determination of whether the 2014 amendments to Rule 4901 resulted in 1.9 tpd of direct $PM_{2.5}$ emissions reductions by 2017. In particular, the 2018 $PM_{2.5}$ Plan's control measure analyses differ from previous inventory estimates in the following ways:

- The 2018 $PM_{2.5}$ Plan inventories estimate that 2013 winter season emissions from residential wood burning devices were 6.35 tpd, compared with the 2015 winter season estimate of 8.037 tpd in the 2014 Rule 4901 Staff Report.[285]
- The 2018 $PM_{2.5}$ Plan inventories estimate that 2017 winter season emissions from residential wood burning devices were 5.49 tpd,

[278] 2018 $PM_{2.5}$ Plan, Chapter 6, 6–3 to 6–4.

[279] Id. at 6–5 to 6–6.

[280] 2018 $PM_{2.5}$ Plan, Table 6–2; email dated November 27, 2019, from Jon Klassen, SJVUAPCD, to Rory Mays, EPA Region IX, Subject: Emissions Reductions from 2014 Amendment to Rule 4901; and letter dated February 4, 2020 from Kurt Karperos, CARB, to Elizabeth Adams, EPA Region IX.

[281] SJVUAPCD, ''Final Staff Report for Amendments to the District's Residential Wood Burning Program,'' September 18, 2014 (''2014 Rule 4901 Staff Report''), App. B, B–12. We note that the 2.2 tpd is based on a 180-day season that reflects the November through April (180-day) period used by the State for ''winter-season,'' 24-hour average emissions inventories for the San Joaquin Valley. This District staff report estimates that the 2014 amendment would achieve emission reductions of 3.27 tpd of direct $PM_{2.5}$ during the November through February (120-day) period in which it applies. See also 80 FR 58637, 58639 (September 30, 2015) (proposed approval of 2014 amendment to Rule 4901) and 81 FR 69393 (October 6, 2016) (final approval of 2014 amendment).

[282] 81 FR 69393.

[283] Id., at 69393–69394.

[284] Appendix B Table B–1 of the 2018 $PM_{2.5}$ Plan contains a summary of direct $PM_{2.5}$ emissions inventories from various source categories, including Residential Fuel Combustion, but does not include emissions values specific to wood-burning devices. The emissions inventories for wood burning devices are found in Appendix C of the 2018 $PM_{2.5}$ Plan, at C–257.

[285] 2014 Rule 4901 Staff Report, App. B, B–5.

compared with the 2017 winter season inventory of 8.35 tpd estimated in the 2012 $PM_{2.5}$ Plan and Supplement.

Overall, the more recent inventories presented in the 2018 $PM_{2.5}$ Plan show a 0.86 tpd reduction in winter season direct $PM_{2.5}$ emissions from wood burning devices between 2013 and 2017.[286] Similarly, the State's August 12, 2019 clarification to its 2017 quantitative milestone report states that a 0.86 tpd reduction in these emissions occurred from 2013 to 2017.[287]

This difference between the emission reductions projected in the 2014 Rule 4901 Staff Report and the emission reductions reflected in the inventories in Appendix C of the 2018 $PM_{2.5}$ Plan appears to be due to an update to emissions inventory methods in 2015–2016. The updated methodology indicates that emissions from this source category are lower than emissions as calculated by the methodology used to develop the emissions inventory in the 2012 $PM_{2.5}$ Plan.[288] The updated methodology is based on a 2014 survey of San Joaquin Valley residents, which provided more representative data regarding fuel usage rates and the number of wood burning devices in use in the District.[289]

In light of this difference between the emission reductions projected in the 2014 Rule 4901 Staff Report and the emission reductions reflected in the inventories in Appendix C of the 2018 $PM_{2.5}$ Plan, the EPA sought clarification from CARB and the District regarding the reductions achieved by the 2014 rule amendment. In response, CARB pointed to the analysis of emissions reductions in the 2014 Rule 4901 Staff Report as demonstrating compliance with the commitment to achieve 1.9 tpd of emissions reductions.[290] CARB and the District also noted that the 2012 $PM_{2.5}$ Plan projected that 2017 emissions from wood burning devices would be 8.35 tpd and the 2018 $PM_{2.5}$ Plan inventory estimates that 2017 emissions from wood burning devices were 5.49 tpd, and concluded that this comparison reflects emission reductions of 2.86 tpd for this source category.[291]

We propose to find, based upon the analysis of projected emission reductions in the 2014 Rule 4901 Staff Report, that the District has complied with the aggregate commitment in the 2012 $PM_{2.5}$ Plan to achieve total emission reductions of 1.9 tpd of direct $PM_{2.5}$ by 2017. Given the differences between the inventories used to create the commitment and the current inventories, we also seek comment as to whether the State and District have met the commitment to achieve total emission reductions of 1.9 tpd of direct $PM_{2.5}$ by 2017.

3. 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 in section IV.C of this preamble, 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 2018 $PM_{2.5}$ 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 IV.C and further in the EPA's BACM/MSM TSD, we propose to determine that the SJV $PM_{2.5}$ Plan provides for the implementation of MSM for sources of direct $PM_{2.5}$ and $PM_{2.5}$ plan precursors as expeditiously as practicable and no later than January 1, 2024, in accordance with the requirements of CAA section 188(e) and the $PM_{2.5}$ SIP Requirements Rule.

4. 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 2006 24-hour $PM_{2.5}$ NAAQS by the most expeditious alternative date practicable.

a. Air Quality Modeling Approach and Results

The EPA's recommended procedures for modeling ambient $PM_{2.5}$ as part of an attainment demonstration are contained in the EPA's ''Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone, $PM_{2.5}$, and Regional Haze'' (''Modeling Guidance'').[292] This guidance recommends that a state use a photochemical model, such as the Comprehensive Air-quality Model with extensions (CAMx) or CMAQ, 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 corroborates concentrations monitored in that year. States may then use the model to simulate emissions occurring in other years required for an attainment plan, namely the base year (which may differ from the base case year) and a future year. 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

[286] 2018 $PM_{2.5}$ Plan, App. C, C–257.

[287] Letter dated August 12, 2019, from Richard W. Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region IX, transmitting ''Attachment: Supplemental Information and Clarifications to 2017 Quantitative Milestones.''

[288] SJVUAPCD, ''2015 Area Source Emissions Inventory Methodology 610—Residential Wood Combustion,'' (dated October 18, 2016), 27, Table 12 (showing decrease in estimated 2015 annual emissions from woodstoves and fireplaces of 461 tons per year).

[289] Id. at 22.

[290] Email dated November 27, 2019, from Jon Klassen, SJVUAPCD, to Rory Mays, EPA Region IX, Subject: Emissions Reductions from 2014 Amendment to Rule 4901; Letter dated February 4, 2020 from Kurt Karperos, CARB, to Elizabeth Adams, EPA Region IX, 2–3.

[291] Id.

[292] ''Modeling Guidance for Demonstrating Air Quality Goals for Ozone, $PM_{2.5}$, and Regional Haze,'' EPA–454/R–18–009, November 2018; available at: *https://www.epa.gov/scram/state-implementation-plan-sip-attainment-demonstration-guidance*. During development of the SJV $PM_{2.5}$ Plan, CARB relied on the draft version of this guidance update, ''Draft Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone, $PM_{2.5}$, and Regional Haze,'' OAQPS, EPA, December 3, 2014 Draft,; 2018 $PM_{2.5}$ Plan, App. K, 11. Additional EPA modeling guidance can be found in 40 CFR 51 App. W (''Guideline on Air Quality Models''), 82 FR 5182 (January 17, 2017); available at *https://www.epa.gov/scram/clean-air-act-permit-modeling-guidance*.

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.

The 2018 $PM_{2.5}$ Plan includes a modeled demonstration projecting that the San Joaquin Valley will attain the 2006 24-hour $PM_{2.5}$ NAAQS by December 31, 2024. Specifically, CARB conducted photochemical modeling with the CMAQ model using inputs developed from routinely available meteorological and air quality data, as well as more detailed and extensive data from the DISCOVER–AQ field study conducted in January to February 2013.[293]

The Plan's primary discussion of the photochemical modeling appears in Appendix K (''Modeling Attainment Demonstration'') of the 2018 $PM_{2.5}$ Plan. The State briefly summarizes the area's air quality problem in Chapter 2.2 (''Air Quality Challenges And Trends'') and summarizes the modeling results in Chapter 6.4 (''Attainment Demonstration and Modeling'') of the 2018 $PM_{2.5}$ Plan. The State provides a conceptual model of $PM_{2.5}$ formation in the San Joaquin Valley as part of the modeling protocol in Appendix L (''Modeling Protocol''). Appendix J (''Modeling Emission Inventory'') describes emission input preparation procedures. The State presents additional relevant information in Appendix C (''Weight of Evidence Analysis'') of the CARB Staff Report, which includes ambient trends and other data in support of the attainment demonstration.

CARB's air quality modeling approach investigated the many inter-connected facets of modeling ambient $PM_{2.5}$ in the San Joaquin Valley, including model input preparation, model performance evaluation, use of the model output for the numerical NAAQS attainment test, and modeling documentation. Specifically, this required the development and evaluation of a conceptual model, modeling protocol, episode (*i.e.,* base year) selection, modeling domain, CMAQ model selection, initial and boundary condition procedures, meteorological model choice and performance, modeling emissions inventory preparation procedures, model performance, attainment test procedure, adjustments to baseline air quality for modeling, the 2024 attainment test, and an unmonitored area analysis. CARB's supplemental weight of evidence analysis further supports the Plan's demonstration of attainment by the end of 2024. These analyses are generally consistent with the EPA's recommendations in the Modeling Guidance.

The model performance evaluation in Appendix K included statistical and graphical measures of model performance. The magnitude and timing of predicted concentrations of total $PM_{2.5}$, as well as of its ammonium and nitrate components, generally match the occurrence of elevated $PM_{2.5}$ levels in the measured observations. A comparison to other recent modeling efforts shows good model performance on bias, error, and correlation with measurements, for total $PM_{2.5}$ and for most of its chemical components. The Weight of Evidence Analysis[294] shows the downward trend in NO_X emissions along with a 50% decrease between 1999 and 2017 in the number of days above the 2006 $PM_{2.5}$ NAAQS.[295] The analysis also shows decreases in daily $PM_{2.5}$ concentrations during winter, and in the frequency of high $PM_{2.5}$ concentrations generally. Available ambient air quality data shows that total $PM_{2.5}$ and ammonium nitrate concentrations have clearly declined over the 2001–2015 period, despite some increases from time to time.[296] These air quality trends show that there has been a substantial improvement in air quality due to emission reductions in the SJV, although that point is not fully reflected in the 98th percentile statistic, which is the basis for the regulatory design value.[297] These lines of evidence all lend confidence in the modeling and the attainment demonstration.

Given the State's extensive discussion of modeling procedures, tests, and performance analyses in the Modeling Protocol, and the good model performance, the EPA finds that the modeling in the SJV $PM_{2.5}$ Plan is adequate for purposes of supporting the demonstration of attainment by 2024. For further detail, please see the EPA's Modeling TSD.

b. Control Strategy

The SJV $PM_{2.5}$ Plan's control strategy to reduce emissions from sources of NO_X and direct $PM_{2.5}$ is presented in Chapter 4 (''Attainment Strategy for $PM_{2.5}$'')[298] and related supporting information in the Plan's control strategy appendices, including Appendix C (''Stationary Source Control Measure Analyses''), Appendix D (''Mobile Source Control Measures Analyses''), and Appendix E (''Incentive-Based Strategy''). Most of the projected emission reductions are achieved by baseline measures—*i.e.,* the combination of State and District measures adopted prior to the State's and District's adoption of the Plan—that will achieve ongoing emission reductions from the 2013 base year to the 2024 projected attainment year.

The remainder of the emission reductions are achieved by an incentive-based measure adopted by CARB in December 2019, a regulatory measures adopted by the District in June 2019, and a number of additional measures to be adopted and implemented by CARB and the District, including regulatory measures and incentive-based measures. In addition, both the 2018 $PM_{2.5}$ Plan and the Valley State SIP Strategy include commitments to take action on specific measures by specific dates and to achieve specified amounts of NO_X and $PM_{2.5}$ emission reductions by certain dates.[299] We refer to these commitments herein as ''aggregate commitments.''

We note that the SJV $PM_{2.5}$ Plan generally relies on annual average emission inventory and control strategy estimates because it was designed to address requirements for the 1997 annual and 24-hour $PM_{2.5}$ NAAQS, the 2006 24-hour $PM_{2.5}$ NAAQS, and the 2012 annual $PM_{2.5}$ NAAQS. The State views the control strategy for the annual average attainment needs as providing sufficient emission reductions for 24-hour average (winter average) attainment and RFP needs.[300] We agree with this assessment and have evaluated the control strategy in the Plan by reference to annual average emission reductions. Table 6 provides a summary

[293] NASA, ''Deriving Information on Surface conditions from COlumn and VERtically Resolved Observations Relevant to Air Quality,'' available at *https://www.nasa.gov/mission_pages/discover-aq/index.html.*

[294] CARB Staff Report, Appendix C.

[295] Id. at 28.

[296] An increase in 2013 and 2014 is attributed to severe drought-related conditions during the winter of 2013–2014. Id. at 27.

[297] Letter dated May 9, 2019, from Richard Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region 9 (transmitting SJV $PM_{2.5}$ Plan to EPA), Attachment A, 3.

[298] Consistent with the State and District's determination that ammonia, SO_X, and VOC do not contribute significantly to $PM_{2.5}$ levels exceeding the NAAQS in the San Joaquin Valley, the Plan's control strategy focuses on reductions in emissions of direct $PM_{2.5}$ and NO_X. CARB Staff Report, 12. Nonetheless, the Plan projects the following annual average emission reductions from the 2013 base year to 2024: 0.5 tpd reductions in SO_X (5.9%), 30.3 tpd reductions in VOC (9.3%), and 4.6 tpd reductions in ammonia (1.4%). 2018 $PM_{2.5}$ Plan, App. B, Tables B–3, B–4, and B–5.

[299] CARB Resolution 18–49, paragraph 2 and SJVUAPCD Governing Board Resolution 18–11–16, paragraph 6.

[300] See, *e.g.,* Letter dated August 12, 2019 from Richard Corey, Executive Officer, CARB to Mike Stoker, Regional Administrator, EPA Region IX, regarding the State's ''2017 Quantitative Milestone Report for the 1997 and 2006 NAAQS,'' 2, n. 3.

of the 2013 base year emissions and the reductions from baseline measures, additional State measures, and additional District measures that are necessary for the San Joaquin Valley to attain the 2006 $PM_{2.5}$ NAAQS by December 31, 2024.[301]

TABLE 6—SUMMARY OF SJV $PM_{2.5}$ PLAN'S ANNUAL AVERAGE EMISSION REDUCTIONS TO ATTAIN THE 2006 $PM_{2.5}$ NAAQS BY DECEMBER 31, 2024

		NO_X (tpd)	% of 2013 base year emissions (percent)	Direct $PM_{2.5}$ (tpd)	% of 2013-base year emissions (percent)
A	2013 Base Year Emissions	317.2	.....	62.5	.....
B	Baseline Measure Emission Reductions (2013–2024)	168.3	53.1	4.2	6.7
C	Additional State Measures	32	10.1	0.9	1.4
D	Additional District Measures	1.88	0.6	1.3	2.1
E	Total 2013–2024 Emission Reductions (B+C+D)	202.2	63.7	6.4	10.2

Source: 2018 $PM_{2.5}$ Plan, Appendix B, Tables B–1 and B–2, and Ch. 4, Tables 4–3 and 4–7.

i. Baseline Measures

Baseline measures will provide the majority of emissions reductions needed to attain the 2006 24-hour $PM_{2.5}$ NAAQS in the San Joaquin Valley, amounting to approximately 83.2% of the NO_X emission reductions and 65.6% of the direct $PM_{2.5}$ emission reductions necessary for attainment.[302]

The 2018 $PM_{2.5}$ Plan states that mobile sources emit over 85% of the NO_X in the San Joaquin Valley and that CARB has adopted and amended regulations to reduce public exposure to diesel particulate matter, which includes direct $PM_{2.5}$, and NO_X, from ''fuel sources, freight transport sources like heavy-duty diesel trucks, transportation sources like passenger cars and buses, and non-road sources like large construction equipment.'' [303]

Given the need for substantial emissions reductions from mobile and area sources to meet the NAAQS in California nonattainment areas, the State of California has developed stringent control measures for on-road and non-road mobile sources and the fuels that power them. California has unique authority under CAA section 209 (subject to a waiver by the EPA) to adopt and implement new emissions standards for many categories of on-road vehicles and engines and new and in-use non-road vehicles and engines. The EPA has approved such mobile source regulations for which waiver authorizations have been issued as revisions to the California SIP.[304]

CARB's mobile source program extends beyond regulations that are subject to the waiver or authorization process set forth in CAA section 209 to include standards and other requirements to control emissions from in-use heavy-duty trucks and buses, gasoline and diesel fuel specifications, and many other types of mobile sources. Generally, these regulations have also been submitted and approved as revisions to the California SIP.[305]

As to stationary sources, the 2018 $PM_{2.5}$ Plan states that stringent regulations adopted for prior attainment plans continue to reduce emissions of NO_X and direct $PM_{2.5}$.[306] Specifically, Table 4–1 of the 2018 $PM_{2.5}$ Plan (''District Rules Reducing PM and NO_X Emissions in the Valley'') identifies 33 District measures that limit NO_X and direct $PM_{2.5}$ emissions.[307] The EPA has approved each of the identified measures into the California SIP,[308] with four exceptions.

First, the District amended Rule 4692 (''Commercial Charbroiling'') on June 21, 2018, to establish new registration and reporting requirements for certain types of charbroiling operations. These amendments to Rule 4692 require commercial cooking operations with UFCs to report by January 1, 2019, on the type and quantity, in pounds, of meat cooked on the UFCs on a weekly basis for the previous 12-month period as well as other information regarding the nature of their operations, and for certain such operations to register with the District and keep weekly records relating to the quantities of meat cooked.[309] CARB submitted the amended rule to the EPA on November 21, 2018, and the EPA has not yet proposed any action on this submission. The EPA approved a prior version of this rule into the SIP on November 3, 2011.[310] The District states that the 2018 amendment was an important first step in its ongoing process to develop a new control measure that will include financial incentives to help fund accelerated deployment of under-fired charbroiler emission control technologies.[311] The 2018 amendments do not, however, establish any new control requirements and therefore do not achieve additional emission reductions beyond those that continue to be achieved by the SIP-approved version of Rule 4692.

Second, the District amended Rule 4905 (''Natural Gas-fired, Fan-type, Residential Central Furnaces'') on June 21, 2018, to extend the period during which manufacturers may pay emission fees in lieu of meeting the rule's NO_X

[301] Emission reductions from baseline measures are calculated as the sum of all stationary, area, and mobile source emission reductions from 2013 to 2024 in App. B of the 2018 $PM_{2.5}$ Plan.

[302] The EPA calculated these percentages as follows: Annual average baseline NO_X reductions are 168.3 tpd of 202.2 tpd necessary for attainment (83.2%) and annual average baseline direct $PM_{2.5}$ reductions are 4.2 tpd of 6.4 tpd necessary for attainment (65.6%). 2018 $PM_{2.5}$ Plan, Ch. 4 and App. B.

[303] 2018 $PM_{2.5}$ Plan, Ch. 4, 4–9 and Valley State SIP Strategy, 4. For CARB's analysis of its mobile source measures for BACM and MSM, see 2018 $PM_{2.5}$ Plan, App. D, including analyses for on-road light-duty vehicles and fuels (starting page D–17), on-road heavy-duty vehicles and fuels (starting page D–35), and non-road sources (starting page D–64).

[304] See *e.g.,* 81 FR 39424 (June 16, 2016); 82 FR 14447 (March 21, 2017); and 83 FR 23232 (May 18, 2018).

[305] See *e.g.,* the EPA's approval of standards and other requirements to control emissions from in-use heavy-duty diesel trucks, 77 FR 20308 (April 4, 2012), and revisions to the California on-road reformulated gasoline and diesel fuel regulations, 75 FR 26653 (May 12, 2010).

[306] 2018 $PM_{2.5}$ Plan, Ch. 4, 4–3. For the District's analysis of its stationary source measures for BACM and MSM, see 2018 $PM_{2.5}$ Plan, App. C.

[307] Id. Ch. 4, Table 4–1.

[308] See EPA Region IX's website for information on District control measures that have been approved into the California SIP, available at: *https://www.epa.gov/sips-ca/epa-approved-san-joaquin-valley-unified-air-district-regulations-california-sip.*

[309] SJVUAPCD Rule 4692, as amended June 21, 2018, and SJVUAPCD, Final Draft Staff Report, ''Amendments to Rule 4692 (Commercial Charbroiling),'' June 21, 2018, 1 and 5–6.

[310] 76 FR 68103 (November 3, 2011) (approving Rule 4692 as amended September 17, 2009).

[311] SJVUAPCD, Final Draft Staff Report, ''Amendments to Rule 4692 (Commercial Charbroiling),'' June 21, 2018, 1.

emission limits.[312] CARB submitted the amended rule to the EPA on November 21, 2018, and the EPA has not yet proposed any action on this submission. The EPA approved a prior version of Rule 4905 into the California SIP on March 29, 2016.[313] As part of that rulemaking, the EPA noted that because of the option in Rule 4905 to pay mitigation fees in lieu of compliance with emission limits, emission reductions associated with the rule's emission limits would not be creditable in any attainment plan without additional documentation.[314] Until the District submits the necessary documentation to credit emission reductions achieved by Rule 4905 toward an attainment control strategy, this rule is not creditable for SIP purposes. The 2018 $PM_{2.5}$ Plan indicates that the District attributed 0.26 tpd of NO_X reductions between 2013 and 2024 to Rule 4905.[315] These emission reductions have de minimis impacts on the attainment demonstration in the SJV $PM_{2.5}$ Plan.

Third, the District amended Rule 9510 (''Indirect Source Review'') on December 21, 2017, to eliminate inconsistencies in its applicability provisions and to ensure that all large development projects are subject to the rule.[316] CARB submitted this rule to the EPA on May 23, 2018, and the EPA has not yet proposed any action on the submission. The EPA approved a prior version of this rule into the California SIP on May 9, 2011.[317] As part of that rulemaking, the EPA noted that emission reductions associated with this rule would not be creditable in any attainment or RFP demonstration unless the District revises the rule to address the EPA's enforceability concerns.[318] Until the District adopts such revisions to the rule, Rule 9510 is not creditable for SIP purposes. The 2018 $PM_{2.5}$ Plan does not, however, appear to rely on this rule to any measurable extent in the projected attainment inventory.[319] Therefore, the District's inclusion of this rule in Table 4–1 of the 2018 $PM_{2.5}$ Plan has no impact on our evaluation of the attainment demonstration.

Finally, the 2018 $PM_{2.5}$ Plan lists Rule 4203 (''Particulate Matter Emissions from Incineration of Combustible Refuse'') as a baseline measure. This rule has not been approved into the California SIP.[320] Appendix C of the 2018 $PM_{2.5}$ Plan states, however, that the emissions inventory for incineration of combustible refuse is 0.00 tpd of NO_X and 0.00 direct $PM_{2.5}$ from 2013 through 2024.[321] Thus, to the extent the District relied upon emission reductions achieved by this rule in its future baseline emissions estimates, those emission reductions have de minimis impacts on the attainment demonstration in the SJV $PM_{2.5}$ Plan.

In sum, although Table 4–1 of the 2018 $PM_{2.5}$ Plan identifies four baseline measures that are not creditable for SIP purposes at this time, we find that the total emission reductions attributed to these four measures in the future baseline inventories have de minimis impacts on the attainment demonstration in the Plan.

ii. Additional Measures and Aggregate Commitments

The SJV $PM_{2.5}$ Plan relies on an incentive-based measure recently adopted by CARB to achieve 5.9 tpd of NO_X reductions and 0.3 tpd of direct $PM_{2.5}$ reductions—2.9% and 4.7%, respectively, of the total NO_X and direct $PM_{2.5}$ emission reductions necessary for the San Joaquin Valley to attain the 2006 $PM_{2.5}$ NAAQS by December 31, 2024.[322] Under longstanding guidance, the EPA has recommended presumptive limits on the amounts of emission reductions from certain voluntary and other nontraditional measures that may be credited in a SIP. Specifically, for voluntary mobile source emission reduction programs, the EPA has identified a presumptive limit of three percent (3%) of the total projected future year emission reductions required to attain the appropriate NAAQS, and for any particular SIP submittal to demonstrate attainment or maintenance of the NAAQS or progress toward attainment (RFP), 3% of the specific statutory requirement.[323] The EPA may, however, approve measures for SIP credit in amounts exceeding the presumptive limits where a clear and convincing justification is made by the State as to why a higher limit should apply in its case.[324]

The San Joaquin Valley's topography and meteorology present significant challenges for air quality. As stated in the 2018 $PM_{2.5}$ Plan, ''the surrounding mountains trap pollution and block airflow'' and ''[t]emperature inversions, while present to some degree throughout the year, can last for days during the winter, holding in nighttime accumulations of pollutants.'' [325] In addition, the population of the area continues to grow at a rate higher than the statewide growth rate, leading to increased vehicular traffic along major highways that run through the San Joaquin Valley.[326] Given these unique challenges, both the State and District continue to implement both traditional and non-traditional emission reduction strategies to attain the $PM_{2.5}$ standards in the San Joaquin Valley, including regulatory programs, incentive programs, and rigorous outreach and education efforts.[327] Over the past several decades, the State and District have developed and implemented several comprehensive plans to address attainment of the NAAQS for ozone and particulate matter.[328] These attainment plans have resulted in the State's and District's adoption of numerous regulations for stationary, area, and mobile sources, many of which are among the most stringent control measures in the nation. Given the air quality needs of the area and the numerous control measures that both the State and District have adopted and

[312] SJVUAPCD, Final Draft Staff Report, ''Proposed Amendments to Rule 4905 (Natural Gas-fired, Fan-type Central Furnaces),'' 2.

[313] 81 FR 17390 (March 29, 2016) (approving Rule 4905 as amended January 22, 2015).

[314] EPA, Region IX Air Division, ''Technical Support Document for EPA's Proposed Rulemaking for the California State Implementation Plan (SIP), San Joaquin Valley Unified Air Pollution Control District's Rule 4905, Natural Gas-Fired, Fan-Type Central Furnaces,'' October 5, 2015, n. 8.

[315] 2018 $PM_{2.5}$ Plan, App. C, C–290.

[316] SJVUAPCD, Final Draft Staff Report, ''Rule 9510 Indirect Source Review.'' December 21, 2017, 1.

[317] 76 FR 26609 (May 9, 2011) (approving Rule 9510 as amended December 15, 2005).

[318] 76 FR 26609, 26612–26614.

[319] The District's control analysis states that there is no emissions inventory specific to Rule 9510. 2018 $PM_{2.5}$ Plan, App. C, C–302.

[320] The EPA does not have any pending SIP submission for Rule 4203.

[321] 2018 $PM_{2.5}$ Plan, App. C, C–46.

[322] The 2018 $PM_{2.5}$ Plan shows that 202.2 tpd of NO_X and 6.4 tpd of $PM_{2.5}$ emission reductions are necessary for San Joaquin Valley to attain the 2006 $PM_{2.5}$ NAAQS by December 31, 2024. 2018 $PM_{2.5}$ Plan, revised App. H, Table H–6. For further discussion of Appendix H, see section IV.E of this preamble.

[323] EPA, ''Guidance on Incorporating Voluntary Mobile Source Emission Reduction Programs in State Implementation Plans (SIPs),'' October 24, 1997, 5.

[324] EPA, ''Incorporating Emerging and Voluntary Measure in a State Implementation Plan (SIP),'' October 4, 2004, 9; see also EPA, ''Guidance on Incorporating Bundled Measures in a State Implementation Plan,'' August 16, 2005, 8, n. 6, and EPA, ''Diesel Retrofits: Quantifying and Using Their Emission Benefits in SIPs and Conformity: Guidance for State and Local Air and Transportation Agencies,'' March 2018, 12.

[325] 2018 $PM_{2.5}$ Plan, Ch. 2, 2–1.

[326] Id. at 2–4.

[327] Id. at 2–2.

[328] See, *e.g.,* 69 FR 30005 (May 26, 2004) (approving plan to attain the 1987 PM_{10} NAAQS), 76 FR 69896 (November 9, 2011) (partially approving and partially disapproving plan to attain the 1997 $PM_{2.5}$ NAAQS), 77 FR 12652 (March 1, 2012) (approving plan to attain the 1997 8-hour ozone NAAQS), and 81 FR 19492 (April 5, 2016) (approving plan to attain the 1979 1-hour ozone NAAQS).

implemented in the San Joaquin Valley to date, we believe it is appropriate to allow the State to rely on the Valley Incentive Measure to achieve 2.9% (5.9 tpd) of the NO_X reductions and 4.7% (0.3 tpd) of the direct $PM_{2.5}$ reductions necessary for the area to attain the 2006 $PM_{2.5}$ NAAQS by the end of 2024.

For the remainder of the emission reductions necessary for attainment, the SJV $PM_{2.5}$ Plan identifies a series of additional State and District commitments to achieve emission reductions through additional control measures beyond baseline measures that will contribute to expeditious attainment of the 2006 $PM_{2.5}$ NAAQS. For mobile sources, CARB's commitment identifies a list of 12 State regulatory measures and three incentive-based measures that CARB has committed to propose to its Board for consideration by specific dates.[329] For stationary sources, the District's commitment identifies a list of nine regulatory measures and three incentive-based measures that the District has committed to propose to its Board for consideration by specific dates.[330] The Plan contains CARB's and the District's estimates of the emission reductions that would be achieved by each of these additional measures, if adopted.[331]

CARB's commitments are contained in CARB Resolution 18–49 (October 25, 2018) and the Valley State SIP Strategy and consist of two parts: A control measure commitment and a tonnage commitment. First, CARB has committed to ''begin the measure's public process and bring to the Board for consideration the list of proposed SIP measures outlined in the *Valley State SIP Strategy* and included in Attachment A, according to the schedule set forth.'' [332] By email dated November 12, 2019, CARB confirmed that it intended to begin the public process on each measure by discussing the proposed regulation or program at a public meeting (workshop, working group, or Board hearing) or in a publicly-released document and to then propose the regulation or program to its Board.[333] Second, CARB has committed ''to achieve the aggregate emissions reductions outlined in the *Valley State SIP Strategy* of 32 tpd of NO_X and 0.9 tpd of $PM_{2.5}$ emissions reductions in the San Joaquin Valley by 2024.'' [334] The Valley State SIP Strategy explains that CARB's overall commitment is to ''achieve the total emission reductions necessary to attain the federal air quality standards, reflecting the combined reductions from the existing control strategy and new measures'' and that ''if a particular measure does not get its expected emissions reductions, the State is still committed to achieving the total aggregate emission reductions.'' [335]

The District's commitments are contained in SJVUAPCD Governing Board Resolution 18–11–16 (November 15, 2018) and Chapter 4 of the 2018 $PM_{2.5}$ Plan and similarly consist of two parts: A control measure commitment and a tonnage commitment. First, the District has committed to ''take action on the rules and measures committed to in Chapter 4 of the Plan by the dates specified therein, and to submit these rules and measures, as appropriate, to CARB within 30 days of adoption for transmittal to EPA as a revision to the [SIP].'' [336] By email dated November 12, 2019, the District confirmed that it intended to take action on the listed rules and measures by beginning the public process on each measure, *i.e.,* discussing the proposed regulation or program at a public meeting, including a workshop, working group, or Board hearing, or in a publicly-released document, and then proposing the rule or measure to the SJVUAPCD Governing Board.[337] Second, the District has committed to ''achieve the aggregate emissions reductions of 1.88 tpd of NO_X and 1.3 tpd of $PM_{2.5}$ by 2024/2025'' through adoption and implementation of these measures or, if the total emission reductions from these rules or measures are less than these amounts, ''to adopt, submit, and implement substitute rules and measures that achieve equivalent reductions in emissions of direct $PM_{2.5}$ or $PM_{2.5}$ precursors'' in the same implementation timeframes.[338]

In November 2019, CARB provided status updates on its progress to date on developing and adopting the additional mobile source measures identified in its control measure commitment.[339] Table 7 lists each measure and provides a summary of the anticipated emission reductions and the current status for each measure. As shown in the ''Current Status'' column, CARB has adopted five measures and begun the public process on seven of the remaining 10 measures listed in its control measure commitment.

TABLE 7—STATUS OF CARB COMPLIANCE WITH CONTROL MEASURE COMMITMENTS FOR THE SAN JOAQUIN VALLEY

Count	Measure	Public process begins	Action	Implementation begins	NO_X emission reductions (tpd)	Direct $PM_{2.5}$ emission reductions (tpd)	Current status [a]
2016 State SIP Strategy Measures							
1	Lower Opacity Limits for Heavy-Duty Vehicles	2016	2018	2018–2024	6.8	<0.1	Adopted July 25, 2018.
2	Amended Warranty Requirements for Heavy-Duty Vehicles.	2016	2018	2022			Adopted June 28, 2018.
3	Heavy-Duty Vehicle Inspection and Maintenance (I/M) Program.	2019	2020	2022 +			Public process began February 11, 2019.
4	Heavy-Duty Low-NO_X Engine Standard—California Action.	2016	2019	2023	0.7		Public process began November 3, 2016.

[329] CARB Resolution 18–49 (October 25, 2018), Attachment A and Valley State SIP Strategy, Table 7 (''State Measures and Schedule for the San Joaquin Valley''). The EPA is excluding two State measures listed in Table 7 of the Valley State SIP Strategy—the ''Advanced Clean Cars 2'' measure and the ''Cleaner In-Use Agricultural Equipment'' measure—because these measures are scheduled for implementation in 2026 and 2030, respectively, well after the January 1, 2024 implementation deadline for control measures necessary for attainment by December 31, 2024. 40 CFR 51.1011(b)(5).

[330] SJVUAPCD Governing Board Resolution 18–11–16 (November 15, 2018) and 2018 $PM_{2.5}$ Plan, Table 4–4 (''Proposed Regulatory Measures'') and Table 4–5 (''Proposed Incentive-Based Measures'').

[331] 2018 $PM_{2.5}$ Plan, Ch. 4, Table 4–3 (''Emission Reductions from District Measures'') and Table 4–9 (''San Joaquin Valley Expected Emission Reductions from State Measures'') and Valley State SIP Strategy, Table 8 (''San Joaquin Valley Expected Emission Reductions from State Measures'').

[332] CARB Resolution 18–49 (October 25, 2018), 5.

[333] Email dated November 12, 2019, from Sylvia Vanderspek, CARB to Anita Lee, EPA Region IX, ''RE: SJV $PM_{2.5}$ information'' (attaching ''Valley State SIP Strategy Progress'') and CARB Staff Report, 14.

[334] CARB Resolution 18–49 (October 25, 2018), 5.

[335] Valley State SIP Strategy, 7.

[336] SJVUAPCD Governing Board Resolution 18–11–16 (November 15, 2018), 10–11.

[337] Email dated November 12, 2019, from Jon Klassen, SJVUAPCD to Wienke Tax, EPA Region IX, ''RE: follow up on aggregate commitments in SJV $PM_{2.5}$ plan'' (attaching ''District Progress In Implementing Commitments with 2018 $PM_{2.5}$ Plan'').

[338] SJVUAPCD Governing Board Resolution 18–11–16 (November 15, 2018), 10–11.

[339] Email dated November 12, 2019, from Sylvia Vanderspek, CARB to Anita Lee, EPA Region IX, ''RE: SJV $PM_{2.5}$ information'' (attaching ''Valley State SIP Strategy Progress'').

TABLE 7—STATUS OF CARB COMPLIANCE WITH CONTROL MEASURE COMMITMENTS FOR THE SAN JOAQUIN VALLEY—Continued

Count	Measure	Public process begins	Action	Implementation begins	NO_X emission reductions (tpd)	Direct $PM_{2.5}$ emission reductions (tpd)	Current status [a]
5	Innovative Clean Transit	2015	2018–2019	2020	<0.1	<0.1	Adopted December 14, 2018.
6	Advanced Clean Local Trucks (Last Mile Delivery).	2016	2019	2020	<0.1	<0.1	Public process began November 1, 2016.
7	Zero-Emission Airport Shuttle Buses	2017	2018	2023	NYQ	NYQ	Adopted June 27, 2019.
8	Zero-Emission Off-Road Forklift Regulation Phase 1.	2020	2020	2023			Public process to begin 2020.
9	Zero-Emission Airport Ground Support Equipment.	2018	2019	2023	<0.1	<0.1	Public process began June 6, 2018.
10	Small Off-Road Engines	2016	2018–2020	2022	0.1	<0.1	Public process began May 23, 2016.
11	Transport Refrigeration Units Used for Cold Storage.	2016	2018–2019	2020 +	NYQ	NYQ	Public process began April 13, 2016.
12	Low-Emission Diesel Fuel Requirement	2019	2021	2023	0.8	0.1	Public process began October 18, 2019.
Proposed State Measures for the Valley (Valley State SIP Strategy)							
13	Accelerated Turnover of Trucks and Buses Incentive Projects [b].	2018	by 2021	Ongoing	10	NYQ	Public process to begin by 2021.
14	Accelerated Turnover of Agricultural Equipment Incentive Projects [b].	2018	by 2020	Ongoing	Existing 3; New 8.	Existing 0.2; New 0.6.	CARB adopted December 12, 2019.
15	Accelerated Turnover of Off-Road Equipment Incentive Projects [b].	2020	by 2021	Ongoing	2	NYQ	Public process to begin by 2021.
Total Estimated Emission Reductions (tpd)					32	1	

Sources: 2018 $PM_{2.5}$ Plan, Tables 4–8 and 4–9 and email dated November 12, 2019, from Sylvia Vanderspek, CARB to Anita Lee, EPA Region IX, ''RE: SJV $PM_{2.5}$ information'' (attaching ''Valley State SIP Strategy Progress'').
NYQ means ''not yet quantified.''
[a] For references on the current status of these measures, see section VIII of the EPA's General Evaluation TSD.
[b] Indicates that CARB intends to develop a SIP-creditable measure to demonstrate that the emission reductions from incentive projects can be credited towards the aggregate commitment.

In November 2019, the District also provided status updates on its progress to date on developing and adopting the additional stationary source measures identified in its control measure commitment.[340] Table 8 lists each measure and provides a summary of the anticipated emission reductions and the current status for each measure. As shown in the ''Current Status'' column, the District has adopted and submitted one of these measures (the 2019 amendment to Rule 4901) to the EPA for approval into the SIP and has begun the public process on five of the remaining 11 measures listed in its control measure commitment.[341]

TABLE 8—STATUS OF SJVUAPCD COMPLIANCE WITH CONTROL MEASURE COMMITMENTS FOR THE SAN JOAQUIN VALLEY

Count	Measure	Public process begins	Action date	Implementation begins	NO_X emission reductions (tpd)	Direct $PM_{2.5}$ emission reductions (tpd)	Current status [a]
1	Rule 4311 (''Flares'')	2018	2020	2023	0.05		Public workshop held November 13, 2019.
2	Rule 4306 (''Boilers, Steam Generators, and Process Heaters—Phase 3'').	2019	2020	2023	0.76	0.03	Public scoping meeting held December 5, 2019.
3	Rule 4320 (''Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr'').						Public scoping meeting held December 5, 2019.
4	Rule 4354 (''Glass Melting Furnaces'')	2020	2021	2023			Public process to begin in 2020.
5	Rule 4352 (''Solid Fuel-Fired Boilers, Steam Generators and Process Heaters'').	2020	2021	2023			Public process to begin in 2020.
6	Rule 4702 (''Internal Combustion Engines'')	2019	2020	2024			Public scoping meeting held December 5, 2019.
7	Rule 4550 (''Conservation Management Practices'').	2021	2022	2024		0.32	Public process to begin in 2021.
8	Rule 4692 (''Commercial Under-fired Charbroilers'').	2019	2020	2024			Public scoping meeting held December 12, 2019.

[340] Email dated November 12, 2019, from Jon Klassen, SJVUAPCD to Wienke Tax, EPA Region IX, ''RE: follow up on aggregate commitments in SJV $PM_{2.5}$ plan'' (attaching ''District Progress In Implementing Commitments with 2018 $PM_{2.5}$ Plan'').

[341] The EPA has recently proposed to approve amended Rule 4901 into the California SIP. 85 FR 1131.

TABLE 8—STATUS OF SJVUAPCD COMPLIANCE WITH CONTROL MEASURE COMMITMENTS FOR THE SAN JOAQUIN VALLEY—Continued

Count	Measure	Public process begins	Action date	Implementation begins	NO_X emission reductions (tpd)	Direct $PM_{2.5}$ emission reductions (tpd)	Current status [a]
9	Rule 4901 (''Woodburning Fireplaces and Wood Burning Heaters'') (Hot-spot strategy).	2019	2019	2019		0.26	Rule adopted June 20, 2019 and submitted to EPA July 22, 2019.
10	Agricultural Operation Internal Combustion Engines Incentive Projects.	2019	2020	Ongoing	1.07		Public process pending.
11	Commercial Under-fired Charbroiling Incentive Projects	2019	2020	Ongoing		0.53	Public process pending.
12	Residential Wood Burning Devices Incentive Projects.	2019	2020	Ongoing		0.16	Public process pending.
Total Estimated Emission Reductions (tpd)					1.88	1.3	

Sources: 2018 $PM_{2.5}$ Plan, Chapter 4, Tables 4–3, 4–4, and 4–5 and Appendix E, Table E–3; SJVUAPCD, Final Draft Staff Report, ''Amendments to District's Residential Wood Burning Emission Reduction Strategy,'' June 20, 2019 (''2019 Rule 4901 Staff Report''); and email dated November 12, 2019, from Jon Klassen, SJVUAPCD to Wienke Tax, EPA Region IX, ''RE: follow up on aggregate commitments in SJV $PM_{2.5}$ plan'' (attaching ''District Progress In Implementing Commitments with 2018 $PM_{2.5}$ Plan'').

[a] For references on the current status of these measures, see section VIII of the EPA's General Evaluation TSD.

With respect to Rule 4901 (''Wood Burning Fireplaces and Wood Burning Heaters''), the District amended this rule on June 20, 2019, to establish more stringent limitations on the use of residential wood burning devices. Specifically, the June 20, 2019 amendment to Rule 4901 lowered the thresholds at which ''No Burn'' days will be imposed to limit direct $PM_{2.5}$ emissions from residential wood burning during the November through February timeframe in three ''hot spot'' counties (Fresno, Kern, and Madera).[342] CARB submitted this amended rule to the EPA on July 22, 2019, and the EPA has proposed to approve the amended rule into the California SIP.[343] The EPA approved a prior version of this rule into the SIP on October 6, 2016.[344] The District's control measure commitment for 2024 and 2025 in Chapter 4 of the 2018 $PM_{2.5}$ Plan indicates that the District expects to achieve 0.42 tpd of direct $PM_{2.5}$ emission reductions through implementation of its residential wood burning strategy, including implementation of the ''No Burn'' provisions in amended Rule 4901.[345] Upon the EPA's final action to approve amended Rule 4901 into the SIP, the additional emission reductions resulting from the ''No Burn'' provisions of the amended rule may be credited toward the attainment demonstration in the Plan.

We note that the District's current estimate of direct $PM_{2.5}$ emission reductions to be achieved through the ''No Burn'' provisions of amended Rule 4901 (0.26 tpd) is based on a compliance rate (referred to as a ''control efficiency'') of 100%. The District estimates an actual control efficiency of 97% to 99%, based on the District's surveillance of neighborhoods in the San Joaquin Valley.[346] This control efficiency is significantly higher than the 75% control efficiency that EPA guidance attributes to wood burning curtailment programs.[347] Because the District has not provided adequate support for a 97–100% rule effectiveness rate, we are crediting the amended rule at this time with 0.20 tpd of direct $PM_{2.5}$ emission reductions toward the attainment control strategy, based on a 75% control efficiency. We have factored this amount into the direct $PM_{2.5}$ emission reductions from approved measures, shown in Row C of Table 9.

Table 9 provides a summary of the total NO_X and direct $PM_{2.5}$ emission reductions necessary for attainment in the San Joaquin Valley by December 31, 2024, the emission reductions attributed to baseline measures and new control strategy measures, and the emission reductions remaining as aggregate tonnage commitments. Approximately 13.8% of the NO_X reductions necessary for attainment and 26.6% of the direct $PM_{2.5}$ reductions necessary for attainment remain as aggregate tonnage commitments.

TABLE 9—REDUCTIONS NEEDED FOR ATTAINMENT AND AGGREGATE TONNAGE COMMITMENTS

[tpd, 2024]

		NO_X	Direct $PM_{2.5}$
A	Total reductions needed from baseline and control strategy measures	202.2	6.4
B	Reductions from baseline measures	168.3	4.2
C	Total reductions from approved measures	5.9	0.5
D	Total reductions remaining as commitments (A–B–C)	28.0	1.7
E	Percent of total reductions needed remaining as commitments (D/A)	13.8%	26.6%

Sources: 2018 $PM_{2.5}$ Plan, Ch. 4, Tables 4–3 and 4–7, and Appendix B, Tables B–1 and B–2; 2019 Rule 4901 Staff Report, 34; and ''Air Plan Approval; California; San Joaquin Valley Unified Air Pollution Control District'' (proposed rule to approve ''San Joaquin Valley Agricultural Equipment Incentive Measure''), pre-publication notice signed February 13, 2020.

[342] The revised rule adds additional restrictions on the installation of wood burning devices, new requirements for fireplace and chimney remodel projects, additional requirements for residential real estate sales, non-seasoned wood to the list of prohibited fuel types, a new visible emissions limit for fireplaces and non-registered devices, and other editorial revisions to improve rule clarity. The emission reductions from these additional revisions were not quantified.

[343] 85 FR 1131.

[344] 81 FR 69393 (October 6, 2016) (approving Rule 4901 as amended September 18, 2014).

[345] 2018 $PM_{2.5}$ Plan, Ch. 4, Table 4–3.

[346] Email dated October 9, 2019 from Jon Klassen, SJVUAPCD to Meredith Kurpius, EPA Region IX, Subject: ''RE: Info to support Rule 4901.''

[347] Strategies for Reducing Wood Smoke, EPA–456/B–13–01, March 2013, 42.

The CAA allows for approval of enforceable commitments that are limited in scope where circumstances exist that warrant the use of such commitments in place of adopted measures.[348] Specifically, CAA section 110(a)(2)(A) provides that each SIP ''shall include enforceable emission limitations and other control measures, means or techniques . . . as well as schedules and timetables for compliance, as may be necessary or appropriate to meet the applicable requirement of the Act.'' Section 172(c)(6) of the Act, which applies to nonattainment SIPs, is virtually identical to section 110(a)(2)(A). The language in these sections of the CAA is quite broad, allowing a SIP to contain any ''means or techniques'' that the EPA determines are ''necessary or appropriate'' to meet CAA requirements, such that the area will attain as expeditiously as practicable, but no later than the designated date. Furthermore, the express allowance for ''schedules and timetables'' demonstrates that Congress understood that all required controls might not have to be in place before a SIP could be fully approved.

Once the EPA determines that circumstances warrant consideration of an enforceable commitment to satisfy a CAA requirement, it considers three factors in determining whether to approve the enforceable commitment: (a) Does the commitment address a limited portion of the CAA requirement; (b) is the state capable of fulfilling its commitment; and (c) is the commitment for a reasonable and appropriate period of time.[349]

With respect to the SJV $PM_{2.5}$ Plan, circumstances warrant the consideration of enforceable commitments as part of the attainment demonstration for this area. As shown in Table 9 of this preamble, the majority of the emissions reductions needed to demonstrate attainment and RFP in the San Joaquin Valley are achieved by rules and regulations adopted prior to the State's development of the SJV $PM_{2.5}$ Plan, *i.e.,* baseline measures. As a result of these already-adopted State and District measures, most air pollution sources in the San Joaquin Valley were already subject to stringent rules prior to the development of the SJV $PM_{2.5}$ Plan, leaving fewer and more technologically-challenging opportunities to reduce emissions. Despite these significant emission reductions, as shown in Table 6 of this preamble, the San Joaquin Valley area needs to reduce NO_X and direct $PM_{2.5}$ emission levels by a total of 63.7% and 10.2%, respectively, from 2013 base year levels in order to attain the 2006 $PM_{2.5}$ NAAQS by the end of 2024.

As part of their respective control measure commitments in the SJV $PM_{2.5}$ Plan, CARB and the District each have identified potential control measures that are expected to achieve the additional emissions reductions needed for attainment. The timeline needed to develop, adopt, and implement these measures, however, goes well beyond the December 31, 2019 serious area attainment date for the 2006 $PM_{2.5}$ NAAQS in this area. Both the State and District are making progress in adopting the rules and measures listed in their respective control measure commitments but have not yet completely fulfilled them. Given these circumstances, we find that the State's and District's reliance on enforceable commitments in the SJV $PM_{2.5}$ Plan is warranted. Therefore, we have considered the three factors the EPA uses to determine whether the use of enforceable commitments in lieu of adopted measures satisfies CAA planning requirements.

(a) The Commitment Represents a Limited Portion of Required Reductions

For the first factor, we look to see if the commitment addresses a limited portion of a statutory requirement, such as the amount of emissions reductions needed to attain the NAAQS in a nonattainment area. As shown in Table 9 of this preamble, most of the total emission reductions needed to attain the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley by the end of 2024 will be achieved through implementation of both baseline and new measures, leaving 13.8% (28.0 tpd) of the necessary NO_X reductions and 26.6% (1.7 tpd) of the necessary direct $PM_{2.5}$ reductions as aggregate tonnage commitments.

Given the nature of the $PM_{2.5}$ challenge in the San Joaquin Valley, the significant reductions in NO_X and direct $PM_{2.5}$ emission levels achieved through implementation of baseline measures over the past several decades, and the difficulty of identifying additional control measures that are feasible for implementation in the area, we find it reasonable for the State and District to seek additional time to adopt the last increment of emission reductions necessary for attainment by 2024.

Therefore, we find that the emission reductions remaining as enforceable commitments in the SJV $PM_{2.5}$ Plan represent a limited portion of the total emissions reductions needed to demonstrate attainment by December 31, 2024.

(b) The State Is Capable of Fulfilling Its Commitment

For the second factor, we consider whether the State and District are capable of fulfilling their commitments. CARB and the District recently provided updates on their progress in developing and adopting the additional mobile source and stationary source measures listed in their respective control measure commitments. Specifically, as shown in Table 7 of this preamble, CARB has adopted four of the 12 regulatory measures listed in its control measure commitment, including heavy-duty vehicle opacity limits, heavy-duty vehicle warranty requirements, Innovative Clean Transit, and Zero-Emission Airport Shuttle Buses. CARB has also begun the public process on seven of the remaining eight regulatory measures listed in CARB's control measure commitment. Additionally, on December 12, 2019, CARB adopted the San Joaquin Valley Agricultural Incentive Measure, one of the three incentive-based measures identified in its control measure commitment. CARB submitted this measure to the EPA on February 11, 2020, and the EPA has proposed to approve it as a revision to the California SIP.[350]

[348] Commitments approved by the EPA under CAA section 110(k)(3) are enforceable by the EPA and citizens under CAA sections 113 and 304, respectively. In the past, the EPA has approved enforceable commitments and courts have enforced these actions against states that failed to comply with those commitments. See, *e.g., American Lung Ass'n of N.J.* v. *Kean,* 670 F. Supp. 1285 (D.N.J. 1987), aff'd, 871 F.2d 319 (3rd Cir. 1989); *NRDC, Inc.* v. *N.Y. State Dept. of Env. Cons.,* 668 F. Supp. 848 (S.D.N.Y. 1987); *Citizens for a Better Env't* v. *Deukmejian,* 731 F. Supp. 1448, recon. granted in par, 746 F. Supp. 976 (N.D. Cal. 1990); *Coalition for Clean Air* v. *South Coast Air Quality Mgt. Dist.,* No. CV 97–6916–HLH, (C.D. Cal. Aug. 27, 1999). Further, if a state fails to meet its commitments, the EPA could make a finding of failure to implement the SIP under CAA section 179(a), which starts an 18-month period for the State to correct the non-implementation before mandatory sanctions are imposed.

[349] The Fifth Circuit Court of Appeals upheld the EPA's interpretation of CAA sections 110(a)(2)(A) and 172(c)(6) and the Agency's use and application of the three factor test in approving enforceable commitments in the 1-hour ozone SIP for Houston-Galveston. *BCCA Appeal Group et al.* v. *EPA et al.,* 355 F.3d 817 (5th Cir. 2003). More recently, the Ninth Circuit Court of Appeals upheld the EPA's approval of enforceable commitments in ozone and $PM_{2.5}$ SIPs for the San Joaquin Valley, based on the same three factor test. Committee for a *Better Arvin, et al.* v. *EPA,* 786 F.3d 1169 (9th Cir. 2015).

[350] Letter dated February 11, 2020, from Richard Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region 9, and ''Air Plan Approval; California; San Joaquin Valley Unified Air Pollution Control District'' (proposed rule to approve ''San Joaquin Valley Agricultural Equipment Incentive Measure''), pre-publication notice signed February 13, 2020.

For CARB's Heavy Duty I/M Program, in addition to the February 11, 2019 workshop, CARB has held three other workshops in 2019.[351] With the passage of California Senate Bill 210, the Heavy Duty I/M Program will be considered for Board action in 2020.[352] For CARB's Heavy-Duty Low-NO_X Engine Standard, following the November 3, 2016 public workshop, CARB held six additional workshops between 2017 and 2019.[353] For the Zero-Emission Airport Ground Support Equipment, CARB held a workshop on August 2, 2018.[354] For the Small Off-Road Engines measure, CARB has held five additional working group meetings and three public workshops between 2017 and 2019.[355] For Transport Refrigeration Units Used for Cold Storage, CARB held additional workshops in 2017 and most recently in October 2019.[356]

CARB continues to pursue additional control strategies to reduce emissions in California's nonattainment areas. For example, ongoing CARB programs that address zero emission airport shuttle buses and transportation refrigeration units used for cold storage have yet to be quantified but are expected to further reduce NO_X and direct $PM_{2.5}$ emissions in the San Joaquin Valley by 2024.[357] Additionally, as part of the development of a draft plan submission to address attainment of the ozone NAAQS in the South Coast, CARB has identified a number of potential new state control measures that would achieve NO_X and direct $PM_{2.5}$ emission reductions not only in the South Coast but also in the San Joaquin Valley.[358] These include a Tier 5 non-road diesel engine standard, a state green contracting measure, a measure to reduce single occupancy vehicle travel, and a locomotive emission reduction measure.

Similarly, the District has made progress in meeting its control measure commitments for the San Joaquin Valley. As shown in Table 8 of this preamble, following an initial December 2018 public workshop, the District adopted amendments to Rule 4901 on June 20, 2019, and CARB submitted the amended rule to the EPA on July 22, 2019.[359] The amendments to Rule 4901 include lowering the residential wood burning curtailment thresholds for Madera, Fresno, and Kern Counties in addition to Valley-wide rule enhancements. The EPA has proposed to approve amended Rule 4901 into the California SIP.[360]

Additionally, the District has started a public process for five of the remaining eight regulatory measures, including each of the five regulatory measures for which it committed to do so by 2019 or earlier. Specifically, on August 23, 2017, the District hosted an initial public scoping meeting on potential amendments to Rule 4311 (''Flares''), and on November 13, 2019, the District hosted a public workshop on potential amendments to the rule.[361] These potential amendments include additional flare minimization requirements, where technologically achievable and economically feasible, and additional ultra-low NO_X flare emission limitations for existing and new flaring activities at Valley facilities, where technologically achievable and economically feasible.

For the remaining four measures in the District's control measure commitment, on June 21, 2018, the District adopted amendments to Rule 4692 that require commercial cooking operations with UFCs to report by January 1, 2019, on the type and quantity, in pounds, of meat cooked on the UFCs on a weekly basis for the previous 12-month period as well as other information regarding the nature of their operations, and for certain such operations to register with the District and keep weekly records relating to the quantities of meat cooked. This is an important first step in the District's development of a new control measure for a source category not previously subject to direct $PM_{2.5}$ emission control requirements in the San Joaquin Valley. The District hosted a public scoping workshop for Rule 4692 on December 12, 2019,[362] and a scoping meeting for Rule 4306 and Rule 4320 on December 5, 2019.[363] Finally, the District held a scoping meeting for Rule 4702, also on December 5, 2019.[364]

Beyond the rules discussed above, both CARB and the District have well-funded incentive grant programs to reduce emissions from mobile, stationary, and area sources in the San Joaquin Valley. Funding for the State's incentive programs in the San Joaquin Valley comes from various sources including the Carl Moyer Program, Proposition 1B Goods Movement Emission Reduction Program, Greenhouse Gas Reduction Fund, and the Funding Agricultural Replacement Measures for Emission Reductions (FARMER) program.[365] Funding for the District's incentive programs comes from a combination of federal, State, and local funding mechanisms, including the Diesel Emission Reduction Act (DERA) and Target Airshed Grant programs, the Carl Moyer Program, and fees assessed in the San Joaquin Valley by the California Department of Motor Vehicles and by the District through programs for Indirect Source Review, Voluntary Emission Reduction Agreements, and large boilers, steam generators, and process heaters.[366]

Collectively, these incentive funds have been applied to a wide range of emission sources, including heavy-duty trucks, light-duty vehicles, mobile agricultural equipment, locomotives, school buses, alternative fuel infrastructure, community-based programs, agricultural irrigation pumps, residential wood combustion devices, and commercial charbroilers.[367] The Plan identifies the total funding need for expeditious attainment as $5 billion, including $3.3 billion for heavy-duty trucks and buses and $1.4 billion for mobile agricultural equipment.[368]

[351] Information about the proposed Heavy-Duty I/M Program is available at *https://ww2.arb.ca.gov/our-work/programs/inspection-and-maintenance-program/Meetings-and-Workshops.*

[352] SB 210 was signed by the California Governor and filed with the Secretary of State on September 20, 2019.

[353] Information about the proposed Heavy-Duty Low-NO_X Engine Standard is available at *https://ww2.arb.ca.gov/our-work/programs/heavy-duty-low-nox/heavy-duty-low-nox-meetings-workshops.*

[354] Information about the proposed Zero-Emission Airport Ground Support Equipment regulation is available at *https://ww2.arb.ca.gov/our-work/programs/zero-emission-airport-ground-support-equipment/ze-airport-gse-meetings-workshops.*

[355] Information about the proposed Small Off-Road Engines measure is available at *https://ww2.arb.ca.gov/our-work/programs/small-off-road-engines-sore/resources* and *https://ww2.arb.ca.gov/sore-workshops.*

[356] Information about the proposed Transport Refrigeration Units Used for Cold Storage measure is available at *https://ww2.arb.ca.gov/our-work/programs/transport-refrigeration-unit/tru-meetings-workshops.*

[357] 2018 $PM_{2.5}$ Plan, Chapter 4, Table 4–9.

[358] CARB, ''2019 South Coast 8-hour Ozone SIP Update,'' December 12, 2019. See also CARB Resolution 19–31 (December 12, 2019). Further information about this SIP revision is available at *https://ww3.arb.ca.gov/planning/sip/planarea/scabsip/scabsip.htm#2019o3.*

[359] Letter dated July 19, 2019, from Richard Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region 9.

[360] 85 FR 1131.

[361] For more information on this workshop, see *https://www.valleyair.org/Workshops/postings/2019/11-13-19_Flares/presentation.pdf.*

[362] More information on the public scoping workshop on Rule 3692 can be found at *https://www.valleyair.org/Workshops/postings/2019/12-12-19_CC/presentation.pdf.*

[363] More information on the scoping workshop for Rules 4306 and 4320 can be found at *https://www.valleyair.org/Workshops/postings/2019/12-05-19_BGH/presentation.pdf.*

[364] Information on the scoping meeting on Rule 4702 can be found at *https://www.valleyair.org/Workshops/postings/2019/12-05-19_ICE/presentation.pdf.*

[365] 2018 $PM_{2.5}$ Plan, App. E, E–6.

[366] Id.

[367] Id. at App. E, E–8 to E–21.

[368] Id. at App. E, Table E–4 (''Incentive Funding Needed for Expeditious Attainment''). The CARB Staff Report describes the status of current incentive

Continued

We note that, during CARB's September 19, 2019 hearing on the SJV $PM_{2.5}$ Plan, community and environmental advocacy groups raised concerns that incentive funding recently appropriated fell short of the Plan's needs and requested that the State pursue alternative measures to obtain emission reductions from specific stationary sources in the San Joaquin Valley.[369] In response to these concerns and similar concerns raised by CARB Governing Board Member Dean Florez, CARB committed to follow-up with the District and stakeholders and to hold public workshops in the San Joaquin Valley to discuss additional emission reduction opportunities.[370]

We note also that the State and District will have to submit to the EPA, for SIP approval, any control measure that it intends to rely on to satisfy the aggregate tonnage commitments in the Plan. Where the State or District intends to substitute reductions in one pollutant to achieve a tonnage commitment concerning a different pollutant (*e.g.,* substituting NO_X reductions to satisfy a direct $PM_{2.5}$ reduction commitment), it must include an appropriate inter-pollutant trading (IPT) ratio and the technical basis for such ratio. The EPA will review any such IPT ratio and its bases before approving or disapproving the measure.

Given the evidence of the State's and District's progress to date in proposing and adopting the measures listed in their respective control measure commitments and their continuing efforts to develop additional control measures to further reduce NO_X and $PM_{2.5}$ emissions in the San Joaquin Valley, we find that the State and District are capable of meeting their commitments.

(c) The Commitment Is for a Reasonable and Appropriate Timeframe

For the third and last factor, we consider whether the commitment is for a reasonable and appropriate period of time. As discussed in section II.B of this preamble, on March 23, 2017, CARB adopted the 2016 State Strategy and directed staff to return to the Board with a commitment to achieve additional emission reductions from mobile sources in the San Joaquin Valley.[371] CARB responded by developing the Valley State SIP Strategy, which includes additional state commitments to achieve accelerated emission reductions for purposes of attaining the $PM_{2.5}$ NAAQS in the San Joaquin Valley.

In the Valley State SIP Strategy, CARB recognized that the earlier attainment dates for the 1997, 2006, and 2012 $PM_{2.5}$ NAAQS in the San Joaquin Valley compared to ozone attainment dates in the San Joaquin Valley and elsewhere in the State required accelerating the pace of NO_X reductions.[372] Thus, in the Valley State SIP Strategy CARB identified and committed to achieve emission reductions of 32 tpd of NO_X and 0.9 tpd of direct $PM_{2.5}$ by 2024,[373] significantly greater amounts than those CARB had committed to in the 2016 State Strategy (6 tpd of NO_X and 0.1 tpd of direct $PM_{2.5}$ by 2025).[374] CARB defined the estimate of emission reductions by 2024 from the lower in-use performance level of heavy-duty trucks as 6.8 tpd of NO_X, representing the largest emission reduction among the additional prohibitory measures.[375]

The SJV $PM_{2.5}$ Plan includes specific rule development, adoption, and implementation schedules designed to meet the State's and District's commitments to reduce emissions to the levels needed to attain the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley by 2024. For example, the aggregate commitments in the SJV $PM_{2.5}$ Plan include commitments by both the State and the District to begin the public process on each of their respective control measure commitments by specific dates ranging from 2015 to 2021. The commitments also identify action and implementation dates ranging from 2018 to 2024 for a number of State and District control measures, including amendments to SJVUAPCD Rule 4901, Rule 4311, Rule 4306, Rule 4320, Rule 4354, and Rule 4352.[376]

We find that these schedules provide a reasonable and appropriate amount of time for the State and District to achieve the remaining emission reductions necessary to the attain the 2006 24-hour $PM_{2.5}$ NAAQS in the San Joaquin Valley by December 31, 2024. We therefore conclude that the third factor is satisfied.

c. Conclusion

The EPA must make several findings in order to approve the modeled attainment demonstration in an attainment plan SIP submission. First, we must find that the attainment demonstration's technical bases, including the emissions inventories and air quality modeling, are adequate. As discussed in sections IV.A and IV.D.4.a of this preamble, we are proposing to approve both the emissions inventories and the air quality modeling on which the SJV $PM_{2.5}$ Plan's attainment demonstration and related provisions are based.

Second, we must find that the SIP submittal provides for expeditious attainment through the timely implementation of all BACM and BACT. As discussed in section IV.C of this preamble, we are proposing to approve the BACM/BACT demonstration in the SJV $PM_{2.5}$ Plan.

Third, the EPA must find that the emissions reductions that are relied on for attainment in the SIP submission are creditable. As discussed in section IV.D.4, the SJV $PM_{2.5}$ Plan relies principally on already adopted and approved rules to achieve the emissions reductions needed to attain the 2006 24-hour $PM_{2.5}$ standards in the San Joaquin Valley by December 31, 2024. The balance of the reductions is currently in the form of enforceable commitments that account for 13.8% of the NO_X and 26.6% of the direct $PM_{2.5}$ emissions reductions needed for attainment, as shown in Table 9 of this preamble.

The EPA has previously accepted enforceable commitments in lieu of adopted control measures in attainment demonstrations when the circumstances warrant it and the commitments meet three criteria. As discussed herein, we find that circumstances here warrant the consideration of enforceable commitments and that the three criteria are met: (1) The commitments constitute a limited portion of the required emissions reductions, (2) both the State and the District have demonstrated their capability to meet their commitments, and (3) the commitments are for an appropriate timeframe. We therefore propose to allow the State to rely on these enforceable commitments in its attainment demonstration.

Based on these evaluations, we propose to determine that the SJV $PM_{2.5}$ Plan provides for attainment of the 2006 24-hour $PM_{2.5}$ NAAQS by the most expeditious alternative date practicable, consistent with the requirements of CAA sections 189(b)(1)(A) and 188(e).

funding and CARB's expectations concerning future incentive funding out to 2024 for the San Joaquin Valley. CARB Staff Report, section F (''Status of Incentive Funding''), 24–27.

[369] Letter dated September 17, 2019, from Genevieve Gale, Central Valley Air Quality (CVAQ) Coalition, et al to CARB Board Members and Staff.

[370] J&K Court Reporting, LLC, ''Meeting, State of California Air Resources Board,'' September 19, 2019 (transcript of CARB's public hearing), 100.

[371] CARB Resolution 17–7 (March 23, 2017), page 7.

[372] Valley State SIP Strategy, 2–3 and 6.

[373] CARB Resolution 18–49 (October 25, 2018), page 5.

[374] CARB Resolution 17–7 (March 23, 2017), paragraph 7.

[375] 2018 $PM_{2.5}$ Plan, Ch. 4, Table 4–9.

[376] 2018 $PM_{2.5}$ Plan, Ch. 4, Tables 4–4, 4–5, and 4–8.

5. Application for an Attainment Date Extension

As discussed in section I of this preamble, the Serious area attainment date for the San Joaquin Valley for the 2006 24-hour $PM_{2.5}$ NAAQS under CAA section 188(c)(2) is December 31, 2019. The first criterion for an extension of the attainment date beyond this statutory attainment date is that the State must apply for such extension. In the SJV $PM_{2.5}$ Plan, CARB and SJVUAPCD submitted a complete application for an extension of the Serious area attainment date for the SJV to December 31, 2024, for the 2006 $PM_{2.5}$ NAAQS.[377] In accordance with the requirements of the $PM_{2.5}$ SIP Requirements Rule in 40 CFR 51.1005(b)(2), the SJV $PM_{2.5}$ Plan contains all of the required components of a Serious area plan containing a request for extension of the attainment date under CAA section 188(e), as follows: (1) Base year and attainment projected emissions inventories, (2) provisions to implement MSM and BACM, (3) a modeled attainment demonstration, (4) reasonable further progress provisions, (5) quantitative milestone provisions, (6) contingency measure provisions, and (7) nonattainment new source review plan provisions.[378]

Based on our evaluation of the Plan, we propose to grant the State's request to extend the Serious area attainment deadline from December 31, 2019, to December 31, 2024, for the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley. We are requesting public comment to ensure that the EPA fully considers all relevant factors in evaluating the State's request. If based on new information or public comments we find that a decision to grant the requested extension would not be consistent with the requirements of the Act, the EPA may reconsider this proposal or deny California's request to extend the deadline.[379]

If the EPA were to take final action to deny the request for extension of the attainment date, the EPA would be required under CAA section 179(c) to determine, based on the San Joaquin Valley's air quality as of December 31, 2019, whether the area attained the 2006 $PM_{2.5}$ NAAQS by that date.

E. Reasonable Further Progress and Quantitative Milestones

1. Statutory and Regulatory Requirements

Section 172(c)(2) of the Act provides that all nonattainment area plans shall require reasonable further progress (RFP) toward attainment. In addition, CAA section 189(c) requires that all $PM_{2.5}$ nonattainment area plans contain quantitative milestone for purposes of measuring RFP, as defined in CAA section 171(1), every three years until the area is redesignated to attainment. Section 171(1) of the Act defines RFP as the annual incremental reductions in emissions of the relevant air pollutant as are required by part D, title I of the Act, or as may reasonably be required by the Administrator for the purpose of ensuring attainment of the NAAQS by the applicable attainment date. Neither subpart 1 nor subpart 4 of part D, title I of the Act requires that states achieve a set percentage of emissions reductions in any given year for purposes of satisfying the RFP requirement.

For purposes of the particulate matter NAAQS, RFP has historically been met by showing annual incremental emissions reductions sufficient to maintain ''generally linear progress'' toward attainment by the applicable deadline.[380] As discussed in EPA guidance in the General Preamble Addendum, requiring generally linear progress in reductions of direct $PM_{2.5}$ and relevant $PM_{2.5}$ precursors in a $PM_{2.5}$ attainment 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 $PM_{2.5}$ standards are inventory-wide.[381]

The EPA believes that the facts and circumstances of each specific area will be relevant to whether the emissions reductions meet the agency's expectations for generally linear progress.[382]

The General Preamble Addendum also indicates that requiring generally 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 relevant 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, the EPA has recommended that RFP may be met by stepwise 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 stationary sources, EPA guidance recommends that states may meet RFP by ''adherence to an ambitious compliance schedule'' that is likely to yield significant reductions of direct $PM_{2.5}$ or a $PM_{2.5}$ precursor on a periodic basis, rather than on a generally linear basis.[383] The EPA believes that the facts and circumstances of each specific area will be relevant to whether the emissions reductions meet the agency's expectations for stepwise progress.

Plans for $PM_{2.5}$ nonattainment areas should include detailed schedules for compliance with emission control measures in the area and provide corresponding annual emission reductions to be achieved by each milestone in the schedule.[384] In reviewing an attainment plan under subpart 4, the EPA considers whether the annual incremental emissions reductions to be achieved are reasonable in light of the statutory objective of timely attainment. Although early

[377] CARB Resolution 19–1 (January 24, 2019), (submitting the Plan to EPA as a SIP revision), SJVUAPCD Governing Board Resolution 18–11–16 (November 15, 2018), paragraph 1 (adopting the 2018 $PM_{2.5}$ Plan), and 2018 $PM_{2.5}$ Plan, Ch. 6, 6–1 to 6–2.

[378] Letter dated May 9, 2019, from Richard Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region 9 (transmitting adopted SJV $PM_{2.5}$ Plan) and letter dated November 15, 2019, from Richard Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region 9 (transmitting adopted nonattainment new source review rules for the San Joaquin Valley).

[379] Under CAA section 179(c), the EPA must determine no later than 6 months after the applicable attainment date for any nonattainment area whether the area attained the NAAQS by that date. Absent an extension of the Serious area attainment date under CAA section 188(e), the latest permissible attainment date for the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley Serious nonattainment area was December 31, 2019, and the statutory deadline under CAA section 179(c) for the EPA to determine whether the area attained these NAAQS by the Serious area attainment date is June 30, 2020. See also Memorandum dated November 14, 1994, from Sally L. Shaver, EPA Air Quality Strategies and Standards Division, to EPA Air Division directors, Regions I through X, RE: ''Criteria for Granting 1-Year Extensions of Moderate PM–10 Nonattainment Area Attainment Dates, Making Attainment Determinations, and Reporting on Quantitative Milestones,'' 16 (stating that EPA regional offices will address state requests for 1-year attainment date extensions under CAA section 188(d) no later than 6 months after the applicable attainment date). The CAA does not establish a specific deadline for the EPA's denial of a request for extension of an attainment date.

[380] General Preamble Addendum, 42015.

[381] Id.

[382] 81 FR 58010, 15386.

[383] Id.

[384] Id. at 42016.

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 control measures, and may implement measures that are more effective at reducing $PM_{2.5}$ earlier to provide greater public health benefits.[385]

In addition to the EPA's longstanding guidance on the RFP requirements, the Agency has established specific regulatory requirements in the $PM_{2.5}$ SIP Requirements Rule for purposes of satisfying the Act's RFP requirements and provided related guidance in the preamble to the rule. Specifically, under the $PM_{2.5}$ SIP Requirements Rule, each $PM_{2.5}$ attainment plan must contain an RFP analysis that includes, at minimum, the following four components: (1) An implementation schedule for control measures; (2) RFP projected emissions for direct $PM_{2.5}$ and all $PM_{2.5}$ plan precursors for each applicable milestone year, based on the anticipated control measure implementation schedule; (3) a demonstration that the control strategy and implementation schedule will achieve reasonable progress toward attainment between the base year and the attainment year; and (4) a demonstration that by the end of the calendar year for each triennial milestone date for the area, pollutant emissions will be at levels that reflect either generally linear progress or stepwise progress in reducing emissions on an annual basis between the base year and the attainment year.[386]

A state intending to meet the RFP requirement on a stepwise basis must provide an appropriate justification for the selected implementation schedule.[387] As the EPA explained in the preamble to the $PM_{2.5}$ SIP Requirements Rule, a plan that relies on a stepwise approach to meeting RFP should include ''a clear rationale and supporting information to explain why generally linear progress is not appropriate (*e.g.,* due to the nature of the nonattainment problem, the types of sources contributing to $PM_{2.5}$ levels in the area and the implementation schedule for control requirements at such sources).'' [388] Additionally, states should estimate the RFP projected emissions for each quantitative milestone year by sector on a pollutant-by-pollutant basis.[389]

Section 189(c) of the Act requires that $PM_{2.5}$ attainment plans include quantitative milestones that demonstrate RFP. The purpose of the quantitative milestones is to allow periodic evaluation of the area's progress towards attainment of the $PM_{2.5}$ NAAQS consistent with RFP requirements. 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 should also 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 emissions controls in the attainment plan and the requirement to quantify those required emissions reductions. The CAA also requires a state to submit, within 90 days after each three-year quantitative milestone date, a milestone report that includes technical support sufficient to document completion statistics for appropriate milestones, *e.g.,* the calculations and any assumptions made concerning emission reductions to date.[390]

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 General Preamble Addendum, the 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.[391] In keeping with this historical approach, the EPA established December 31, 2014, the deadline that the EPA established for a state's submission of any additional attainment-related SIP elements necessary to satisfy the subpart 4 Moderate area requirements for the 2006 24-hour $PM_{2.5}$ NAAQS, as the starting point for the first three-year period under CAA section 189(c) for the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley.[392]

Under the $PM_{2.5}$ SIP Requirements Rule, each attainment plan submission for an area designated nonattainment for the 2006 $PM_{2.5}$ NAAQS before January 15, 2015, must contain quantitative milestones to be achieved no later than three years after December 31, 2014, and every three years thereafter until the milestone date that falls within three years after the applicable attainment date.[393] If the area fails to attain, this post-attainment date milestone provides the EPA with the tools necessary to monitor the area's continued progress toward attainment while the state develops a new attainment plan under CAA section 189(d).[394] Quantitative milestones must provide for objective evaluation of reasonable further progress toward timely attainment of the $PM_{2.5}$ NAAQS in the area and include, at minimum, a metric for tracking progress achieved in implementing SIP control measures, including BACM and BACT, by each milestone date.[395]

Because the EPA designated the San Joaquin Valley as a nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS effective December 14, 2009,[396] the plan for this area must contain quantitative milestones to be achieved no later than three years after December 31, 2014, and every three years thereafter until the milestone date that falls within three years after the applicable attainment date.[397] The SJV $PM_{2.5}$ Plan contains a request by the State under CAA section 188(e) to extend the applicable attainment date for the 2006 24-hour $PM_{2.5}$ NAAQS in the San Joaquin Valley to December 31, 2024. Therefore, in accordance with 40 CFR 51.1013(a)(4), the Serious area plan for this area must contain quantitative milestones to be achieved no later than December 31, 2017, December 31, 2020, December 31, 2023, and December 31, 2026.

2. Summary of State's Submission

Appendix H (''RFP, Quantitative Milestones, and Contingency'') of the 2018 $PM_{2.5}$ Plan contains the State's RFP demonstration and quantitative milestones for the 2006 24-hour $PM_{2.5}$ NAAQS. Following the identification of a transcription error in the RFP tables of Appendix H, the State submitted a revised version of Appendix H that corrects the transcription error and provides additional information on the RFP demonstration.[398] Given the State's

[385] Id.

[386] 40 CFR 51.1012(a).

[387] 40 CFR 51.1012(a)(4).

[388] 81 FR 58010, 58057.

[389] 81 FR 58010, 58056.

[390] General Preamble Addendum, 42016, 42017.

[391] General Preamble, 13539, and General Preamble Addendum, 42016.

[392] 79 FR 31566 (June 2, 2014) (final rule establishing subpart 4 moderate area classifications and deadline for related SIP submissions). Although this final rule did not affect any action that the EPA had previously taken under CAA section 110(k) on a SIP for a $PM_{2.5}$ nonattainment area, the 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.

[393] 40 CFR 51.1013(a)(4).

[394] 81 FR 58010, 58064.

[395] Id. at 58064 and 58092.

[396] 74 FR 58688 (November 13, 2009).

[397] 40 CFR 51.1013(a)(4).

[398] Appendix H to 2018 $PM_{2.5}$ Plan, submitted February 11, 2020 via the EPA State Planning Electronic Collaboration System. This revised

conclusions that ammonia, SO_X, and VOC emissions do not contribute significantly to $PM_{2.5}$ levels that exceed the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley, as discussed in section IV.B of this preamble, the RFP demonstration provided by the State addresses emissions of direct $PM_{2.5}$ and NO_X.[399] Similarly, the State developed quantitative milestones based upon the Plan's control strategy measures that achieve emission reductions of direct $PM_{2.5}$ and NO_X.[400] For the 2006 $PM_{2.5}$ NAAQS, the RFP demonstration in the Plan follows a stepwise approach due to the time required for CARB and the District ''to amend rules, develop programs, and implement the emission reduction measures.'' [401] The revised Appendix H provides clarifying information on the RFP demonstration, including additional information to justify the Plan's stepwise approach to demonstrating RFP. This clarifying information did not affect the Plan's quantitative milestones.

We describe the RFP demonstration and quantitative milestones in the SJV $PM_{2.5}$ Plan in greater detail below.

a. Reasonable Further Progress

The State addressed the RFP and quantitative milestone requirements in Appendix H to the 2018 $PM_{2.5}$ Plan submitted in February 2020. The Plan estimates that emissions of direct $PM_{2.5}$ and NO_X will generally decline from the 2013 base year to the projected 2024 attainment year, and beyond to the 2026 quantitative milestone year. The Plan's emissions inventory shows that direct $PM_{2.5}$ and NO_X are emitted by a large number and range of sources in the San Joaquin Valley. Table H–2 in Appendix H contains an anticipated implementation schedule for District regulatory control measures and Table 4–8 in Chapter 4 of the 2018 $PM_{2.5}$ Plan contains an anticipated implementation schedule for CARB control measures in the San Joaquin Valley. Table H–5 in Appendix H (reproduced in Table 10) contains projected emissions for each quantitative milestone year and the attainment year. These emission levels reflect both baseline emissions projections and commitments to achieve additional emission reductions through implementation of new control measures beginning in 2024.[402]

TABLE 10—$PM_{2.5}$ PROJECTED EMISSIONS INVENTORY FOR BASE AND MILESTONE YEARS, INCLUDING BASELINE MEASURES AND EMISSION REDUCTION COMMITMENTS

[Annual average tpd]

Pollutant	2013	2017	2020	2023	2024	2026
	Baseline year	Quantitative milestone	Quantitative milestone	Quantitative milestone	Attainment year	Quantitative milestone
$PM_{2.5}$	62.5	58.9	59.0	58.3	56.1	56.2
NO_X	317.2	233.3	203.3	153.6	115.0	105.5

Source: 2018 $PM_{2.5}$ Plan, Appendix H, Table H–5.

Table H–6 and Table H–7 of Appendix H (reproduced in Table 11) identify the reductions needed for attainment of the 2006 $PM_{2.5}$ NAAQS by 2024, and the San Joaquin Valley's progress toward attainment in each milestone year.

TABLE 11—REDUCTIONS NEEDED FOR ATTAINMENT AND ACHIEVED IN EACH MILESTONE YEAR

[Annual average]

Pollutant	Reductions needed for attainment (from 2013 baseline) (tpd)	Percent reductions achieved in milestone year				
		2017	2020	2023	2024	2026 [a]
		Quantitative milestone (percent)	Quantitative milestone (percent)	Quantitative milestone (percent)	Attainment year (percent)	Quantitative milestone (percent)
$PM_{2.5}$	6.4	56.3	54.7	65.6	100	98.4
NO_X	202.2	41.5	56.3	81.0	100	104.7

Source: 2018 $PM_{2.5}$ Plan, Appendix H, Tables H–6 and H–7.
[a] The EPA has made minor corrections to the calculated percentages for 2026 in Table H–7 of the 2018 $PM_{2.5}$ Plan.

Based on the data in Tables 10 and 11, the State and District set RFP targets for the attainment year and quantitative milestone years as shown in Table H–10 of Appendix H (reproduced in Table 12). The targets are consistent with a stepwise approach to demonstrating RFP. For direct $PM_{2.5}$, significant reductions between the 2013 baseline and the 2017 milestone year (approximately 56% of the reductions needed for attainment) are consistent with a generally linear approach to demonstrating RFP. However, between the 2017 and 2020 milestone years, projected direct $PM_{2.5}$ emissions increase. Emissions of direct $PM_{2.5}$ decrease by the 2023 milestone year but fall short of the rate of reductions that would show generally linear

version of Appendix H replaces the version submitted with the 2018 $PM_{2.5}$ Plan on May 10, 2019. All references to Appendix H in this proposed rule are to the revised version of Appendix H submitted February 11, 2020.

[399] 2018 $PM_{2.5}$ Plan, App. H, H–1.

[400] Id. at H–22 to H–23 (for State milestones) and H–19 to H–20 (for District milestones).

[401] 2018 $PM_{2.5}$ Plan, App. H, H–4.

[402] In App. H, see Tables H–3 (emission projections based on baseline measures) and H–4 (reductions from control measure commitments). The SJV $PM_{2.5}$ Plan includes commitments for reductions from new control measures in 2024 and 2025. With respect to the projected emission reductions for 2026, the District and CARB stated in a conversation with EPA staff on January 6, 2020 that they assumed reductions achieved in 2026 would be similar to reductions committed to in 2024 and 2025. See memorandum dated January 6, 2020, from Laura Lawrence, EPA Region IX Air Planning Office, to docket number EPA–R09–OAR–2019–0318.

progress.[403] The Plan relies on a more substantial direct $PM_{2.5}$ emission reduction in 2024 due, in large part, to the State's and District's commitments to achieve additional $PM_{2.5}$ emission reductions from new measures in 2024. Direct $PM_{2.5}$ emissions are projected to increase slightly in 2026.

For NO_X, the emission projections show steady reductions over time. The projection for the 2017 milestone year is consistent with a generally linear RFP demonstration, but for the 2020 and 2023 milestone years, emission reductions fall short of generally linear progress toward attainment.[404] The Plan relies on a more substantial NO_X emission reduction in 2024 due, in large part, to the State's and District's commitments to achieve additional NO_X reductions from new measures that year. NO_X emissions are projected to continue to decrease in the 2026 milestone year.

According to the Plan, reductions in both direct $PM_{2.5}$ and NO_X emissions from 2013 base year levels result in emissions levels consistent with attainment in the 2024 attainment year. Based on these analyses, the State and District conclude that the adopted control strategy and additional commitments for reductions from new control programs beginning in 2024 are adequate to meet the RFP requirement for the 2006 $PM_{2.5}$ NAAQS.

TABLE 12—STEPWISE RFP TARGET EMISSION LEVELS AND PROJECTED EMISSION LEVELS FOR MILESTONE AND ATTAINMENT YEARS

[Annual average tpd]

Pollutant	2017		2020		2023		2024[a]		2026	
	Target	Projected	Target	Projected	Target	Projected	Target	Projected	Target[b]	Projected
$PM_{2.5}$	58.9	58.9	59.0	59.0	58.3	58.3	56.1	56.1	56.2	56.2
NO_X	233.3	233.3	203.3	203.3	153.6	153.6	115.0	115.0	105.5	105.5

Source: 2018 $PM_{2.5}$ Plan, Appendix H, Tables H–6 and H–10.

[a] Emissions targets and projections for the 2024 attainment year are provided in Table H–6 of the 2018 $PM_{2.5}$ Plan.

[b] Direct $PM_{2.5}$ emissions for 2026 are derived from the Plan's projected emissions inventory (including baseline controls), less the 2.2 tpd of direct $PM_{2.5}$ emissions that CARB and the District committed to achieve by 2024. 2018 $PM_{2.5}$ Plan, Appendix H, Tables H–3, H–4, and H–5.

The State and District's control strategy for attaining the 2006 $PM_{2.5}$ NAAQS relies primarily on ongoing reductions from baseline measures, recent revisions to the District's residential wood burning rule (Rule 4901), and an aggregate tonnage commitment for the remaining reductions needed for attainment. The majority of the NO_X and $PM_{2.5}$ reductions needed for attainment result from CARB's current mobile source control program. As shown in Table 11, the attainment control strategy in the Plan is projected to achieve a total of 202.2 tpd of NO_X reductions by 2024, of which 78% (157 tpd) is attributed to CARB's mobile source control program.[405] Similarly, the attainment control strategy is projected to achieve a total of 6.4 tpd of direct $PM_{2.5}$ reductions by 2024, of which 72% (4.6 tpd) is attributed to CARB's mobile source control program.[406] These on-going controls will thus result in additional reductions in NO_X and direct $PM_{2.5}$ emissions between the base year (2013) and the attainment year (2024).[407]

CARB's mobile source control program provides significant ongoing reductions in emissions of direct $PM_{2.5}$ and NO_X from on-road and non-road mobile sources such as light duty vehicles, heavy-duty trucks and buses, non-road equipment, and fuels. For on-road and non-road mobile sources, which represent the largest sources of NO_X emissions in the San Joaquin Valley, Appendix H of the 2018 $PM_{2.5}$ Plan identifies five mobile source regulations and control programs that limit emissions of direct $PM_{2.5}$ and NO_X: The On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation (''Truck and Bus Regulation''), the Advanced Clean Cars Program (''ACC Program''), the In-Use Off-Road Diesel-Fueled Fleets Regulation (''Off-Road Regulation''), the Heavy-Duty Vehicle Inspection and Maintenance Program, and the California Low-NO_X Engine Standard for new on-road heavy-duty engines used in medium- and heavy-duty trucks purchased in California.[408] CARB's mobile source BACM and MSM analysis in Appendix D of the 2018 $PM_{2.5}$ Plan provides a more comprehensive overview of each of these programs and regulations, among many others.[409] CARB's emission projections for mobile sources are presented in the Plan's emissions inventory.[410]

The Truck and Bus Regulation, first adopted in 2008 and amended in 2011, has rolling compliance deadlines based on truck engine model year (MY). CARB's implementation of the Truck and Bus Regulation includes phase-in requirements for $PM_{2.5}$ and NO_X emissions reductions that began in 2012 and require nearly all pre-2010 vehicles to have exhaust emissions meeting 2010 MY engine emission levels by 2023.[411] The 2010 MY engines include particulate filters for direct $PM_{2.5}$ control. By 2016, the particulate filter requirement for trucks with a gross vehicle weight rating greater than 26,001 pounds was fully implemented in the San Joaquin Valley and all heavier trucks with 1995 and older model year engines were required to have a 2010 engine installed or replaced by a truck with a 2010 MY engine.[412]

For non-road vehicles, CARB adopted the Off-Road Regulation in 2007 to regulate vehicles used in construction, mining, and other industrial applications. The Off-Road Regulation requires owners to (1) replace older

[403] To show generally linear progress, direct $PM_{2.5}$ emissions would need to decrease by approximately 64% from the baseline year in 2020, and by approximately 91% from the baseline year in 2023. The actual decreases for these years are 55% in 2020, and 66% in 2023.

[404] To show generally linear progress, NO_X emissions would need to decrease by approximately 64% from the baseline year in 2020, and by approximately 91% from the baseline year in 2023. The actual decreases for these years are 56% in 2020, and 81% in 2023.

[405] Id. at Chapter 4, Table 4–7.

[406] Id.

[407] Id. at App. H, H–4.

[408] 2018 $PM_{2.5}$ Plan, App. H, H–21 and H–22. Because the second phase of the Advanced Clean Cars Program (''ACC 2'') is not scheduled for implementation until 2026 (see 2018 $PM_{2.5}$ Plan, Table 4–8), which is after the January 1, 2024 implementation deadline under 40 CFR 51.1011(b)(5) for control measures necessary for attainment by December 31, 2024, we are not reviewing this program as part of the control strategy in the SJV $PM_{2.5}$ Plan.

[409] 2018 $PM_{2.5}$ Plan, App. D, Ch. IV.

[410] 2018 $PM_{2.5}$ Plan, App. B.

[411] The State's quantitative milestone report for the 2017 milestone indicates that the requirement for heavier trucks to install diesel particulate filters was fully implemented by 2016. CARB and SJVUAPCD, ''2017 Quantitative Milestone Report for the 1997 and 2006 NAAQS,'' November 21, 2018 (''2017 QM Report''), 5.

[412] Id.

engines or vehicles with newer, cleaner models, (2) retire older vehicles or reduce their use, or (3) apply retrofit exhaust controls.[413] Beginning in 2014 for large fleets and in 2017 for medium fleets, non-road fleets are required to meet increasingly stringent fleet average indices over time.[414] These indices reflect a fleet's overall PM and NO_X emissions rates by model year and horsepower.

The District has also adopted numerous stationary and area source rules for direct $PM_{2.5}$ and NO_X emission sources that are projected to contribute to RFP and attainment of the $PM_{2.5}$ standards. These include control measures for stationary internal combustion engines, residential fireplaces, glass manufacturing facilities, agricultural burning sources, and various sizes of boilers, steam generators, and process heaters used in industrial operations. Appendix H of the 2018 $PM_{2.5}$ Plan identifies stationary source regulatory control measures implemented by the District that achieve ongoing $PM_{2.5}$ and/or NO_X reductions through the Plan's RFP milestone years and the attainment year, including the following: Rule 4354 (''Glass Melting Furnaces''), Rule 4702 (Internal Combustion Engines''), and Rule 4901 (''Wood Burning Fireplaces and Wood Burning Heaters'').[415]

Rule 4354 was last amended in 2011 to lower certain limits on emissions of NO_X, SO_X, and PM_{10} from container glass, flat glass, and fiberglass manufacturing facilities. Rule 4702 was last amended in 2013 to lower the NO_X and SO_X emission limits for various types of internal combustion engines rated at 25 brake horsepower or greater. The District most recently amended Rule 4901 in 2019 to lower the thresholds at which ''No Burn'' days will be imposed to limit direct $PM_{2.5}$ emissions from high-polluting wood burning heaters and fireplaces during the November through February timeframe in three ''hot spot'' counties (Fresno, Kern, and Madera). These rules contribute to incremental reductions in emission of direct $PM_{2.5}$ and NO_X from the 2013 base year to the 2017 and 2020 RFP milestone years.[416] Additional District measures to control sources of direct $PM_{2.5}$ and NO_X are also presented in the Plan's BACM/MSM analyses and reflected in the Plan's baseline emission projections.[417]

For the remainder of the emission reductions necessary for attainment, the SJV $PM_{2.5}$ Plan identifies a series of additional State and District commitments to achieve emission reductions through additional control measures and incentive programs that will contribute to attainment of the 2006 $PM_{2.5}$ NAAQS by 2024. For mobile sources, CARB's commitment identifies a list of 12 regulatory measures and three incentive-based measures that CARB has committed to propose to its Board for consideration by specific dates.[418] For stationary and area sources, the District's commitment identifies a list of nine regulatory measures and three incentive-based measures that the District has committed to propose to its Board for consideration by specific dates.[419] Both CARB and the District have committed to achieve specific amounts of reductions in direct $PM_{2.5}$ and NO_X emissions by 2024, either through implementation of these listed measures or through implementation of other control measures that achieve the necessary amounts of emission reductions by 2024.[420]

The 2018 $PM_{2.5}$ Plan discusses a number of additional control measures that the District may adopt to meet its aggregate tonnage commitment, including additional control requirements for flares; boilers, steam generators, and process heaters of various sizes; glass melting furnaces; internal combustion engines; conservation management practices for agricultural operations; and commercial under-fired charbroilers.[421] In addition, the Plan states that the District intends to use incentive programs to reduce emissions of direct $PM_{2.5}$ and NO_X from internal combustion engines used in agricultural operations, commercial under-fired charbroilers, and residential woodburning devices.[422] The 2018 $PM_{2.5}$ Plan establishes deadlines between 2018 and 2023 for CARB to take action on and begin implementing the 15 additional mobile source control measures that CARB has committed to propose to its Board [423] and similar deadlines between 2019 and 2024 for the District to take action on and begin implementing the 12 additional District control measures that the District has committed to propose to its Board.[424]

The anticipated implementation schedule for new District measures is presented both in Table H–2 of Appendix H and in tables 4–4 and 4–5 of the 2018 $PM_{2.5}$ Plan, and the anticipated implementation schedule for new CARB measures is presented in Table 4–8 of the 2018 $PM_{2.5}$ Plan. These anticipated implementation schedules are summarized in Table 13, below. Although the commitment to achieve reductions is based on an aggregate commitment for total reductions in 2024, the State and District anticipate implementing many of the measures in Table 13 prior to these dates to achieve the aggregate tonnage commitment.

Specifically, implementation of the District's revisions to Rule 4901 (''Wood Burning Fireplaces and Wood Burning Heaters'') began in 2019, and implementation of CARB's lower opacity limits for heavy-duty vehicles began in 2018. Additionally, the District anticipates implementing several measures beginning in 2023 and CARB anticipates implementing several measures in 2020, 2022, and 2023.[425]

[413] 2017 QM Report, 8.

[414] A fleet average index is an indicator of a fleet's overall emissions rate of particulate matter and NO_X based on the horsepower and model year of each engine in the fleet.

[415] 2018 $PM_{2.5}$ Plan, App. H, Table H–2.

[416] 2017 QM Report, 2–3.

[417] 2018 $PM_{2.5}$ Plan, App. B and App. C.

[418] 2018 $PM_{2.5}$ Plan, Chapter 4, Table 4–8 and CARB Resolution 18–49 (October 25, 2018), 5. Table 4–8 of the 2018 $PM_{2.5}$ Plan lists 14 State regulatory measures but we are excluding from our review the ''Advanced Clean Cars 2'' measure and the ''Cleaner In-Use Agricultural Equipment'' measure, because these measures are scheduled for implementation in 2026 and 2030, respectively, well after the January 1, 2024 implementation deadline for control measures necessary for attainment by December 31, 2024. 40 CFR 51.1011(b)(5).

[419] 2018 $PM_{2.5}$ Plan, Chapter 4, Table 4–4 and SJVUAPCD Governing Board Resolution 18–11–16 (November 15, 2018), 10–11.

[420] SJVUAPCD Governing Board Resolution 18–11–16 (November 15, 2018), 10–11 and CARB Resolution 18–49 (October 25, 2018), 5.

[421] 2018 $PM_{2.5}$ Plan, Chapter 4, 4–12 and 4–15 to 4–22.

[422] Id. at 4–22 to 4–24.

[423] 2018 $PM_{2.5}$ Plan, Chapter 4, Table 4–8 and CARB Resolution 18–49 (October 25, 2018), 5. The EPA is excluding two State measures listed in Table 4–8 of the 2018 $PM_{2.5}$ Plan, the ''Advanced Clean Cars 2'' measure and the ''Cleaner In-Use Agricultural Equipment'' measure, because these measures are scheduled for implementation in 2026 and 2030, respectively, well after the January 1, 2024 implementation deadline for control measures necessary for attainment by December 31, 2024. 40 CFR 51.1011(b)(5).

[424] 2018 $PM_{2.5}$ Plan, Table 4–4 and Table 4–5 and SJVUAPCD Governing Board Resolution 18–11–16 (November 15, 2018), 10–11.

[425] For more detail on our evaluation of the State's and District's aggregate commitments, see section IV.D.4.b.ii of this preamble.

TABLE 13—ANTICIPATED IMPLEMENTATION SCHEDULE FOR STATE AND DISTRICT MEASURES

CARB measures	Implementation begins
Lower In-Use Emission Performance Level:	
Lower Opacity Limits for Heavy-Duty Vehicles	2018–2024.
Amended Warranty Requirements for Heavy-Duty Vehicles	2022.
Heavy-Duty Vehicle Inspection and Maintenance Program	2022.
Low-NO_X Engine Standard	2023.
Innovative Clean Transit	2020.
Advanced Clean Local Trucks (Last Mile Delivery)	2020.
Zero-Emission Airport Shuttle Buses	2023.
Zero-Emission Off-Road Forklift Regulation Phase 1	2023.
Zero-Emission Airport Ground Support Equipment	2023.
Small Off-Road Engines	2022.
Transport Refrigeration Units Used for Cold Storage	2020.
Low-Emission Diesel Fuel Requirement	2023.
Accelerated Turnover of Trucks and Buses	Ongoing.
Accelerated Turnover of Agricultural Equipment	Ongoing.
Accelerated Turnover of Off-Road Equipment	Ongoing.
District measures	**Implementation begins**
Rule 4311 (''Flares'')	2023.
Rule 4306 (''Boilers, Steam Generators, and Process Heaters—Phase 3''), Rule 4320 (''Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr'').	2023.
Rule 4702 (''Internal Combustion Engines'')	2024.
Rule 4354 (''Glass Melting Furnaces'')	2023.
Rule 4352 (''Solid Fuel-Fired Boilers, Steam Generators and Process Heaters'')	2023.
Rule 4550 (''Conservation Management Practices'')	2024.
Rule 4692 (''Commercial Charbroiling'') (Hot-spot Strategy)	2024.
Rule 4901 (''Wood Burning Fireplaces and Wood Burning Heaters'') (Hot-spot Strategy)	2019.
Replacement of Internal Combustion Engines used at Agricultural Operations	Ongoing.
Installation of Commercial Under-fired Charbroiling Controls (Hot-spot Strategy)	Ongoing.
Replacement of Residential Wood Burning Devices (Valley-wide and Hot-spot Strategy)	Ongoing.

Source: 2018 $PM_{2.5}$ Plan, Table 4–4, Table 4–5, Table 4–8 and Appendix H, Table H–2.

Section H.1.3 of Appendix H of the Plan provides the State's and District's justifications for the stepwise approach to meeting the RFP requirement and the related implementation schedules for new or revised control measures. These justifications include the time needed to engage in the rulemaking process, including time for state and local public processes; the need to provide time for industry to comply with new regulatory requirements; the need to resolve feasibility issues for emerging technologies; and, for CARB mobile source measures, the need for affected industries to prepare technologies and infrastructure for market-scale adoption.

For example, Appendix H of the 2018 $PM_{2.5}$ Plan states that ''time after rule adoption will be necessary for unit manufacturers and vendors to make available compliant equipment, and for facility operators to source, purchase, and install new units or compliant retrofit equipment. Dependent on the source category, construction of controls will include engineering, site preparation and infrastructure upgrades, unit installation, and operator training on proper operation.'' [426]

We present below some of the implementation challenges that the State and District have identified as part of their justification for meeting the RFP requirement by the stepwise approach in the Plan.

The new NO_X control measures that CARB and the District anticipate implementing toward the end of the attainment period can be found in Table 4–4, Table 4–5, and Table 4–8 of the 2018 $PM_{2.5}$ Plan. Appendix H of the 2018 $PM_{2.5}$ Plan provides the following explanation for the need to implement the listed measures in a stepwise manner:

''The objective of many of CARB's new measures is to introduce or advance innovative technologies in early stages of development or market penetration. In the case of technology-forcing regulations, . . . time is needed by the affected industry to ready the technologies, including infrastructure, for market-scale adoption, and would have been discussed previously by CARB and stakeholders during the measure development phase. The time required to facilitate new and innovative technologies is a principle driver of the timeline for control measure implementation CARB laid out in Table 4–8.'' [427]

CARB provided more specific information regarding two of these measures on pages H–9 and H–10 of Appendix H. For instance, the development of the Heavy-Duty Vehicle Inspection and Maintenance Program was affirmed by California legislative action in 2019, and CARB is now working on program design and infrastructure to implement new legislative direction.[428] For the Low-NO_X Engine Standard, the implementation timeline has been influenced by a multi-year research program to assess the feasibility of this standard.

The new direct $PM_{2.5}$ measures that CARB and the District anticipate implementing toward the end of the attainment period can be found in Table 4–4, Table 4–5, and Table 4–8 of the 2018 $PM_{2.5}$ Plan. CARB's additional measures are expected to achieve 0.9 tpd of direct $PM_{2.5}$ emission reductions [429] and the District's

[426] 2018 $PM_{2.5}$ Plan, App. H, H–7.

[427] 2018 $PM_{2.5}$ Plan, App. H, H–8.

[428] California Senate Bill 210, signed September 20, 2019.

[429] 2018 $PM_{2.5}$ Plan, Table 4–9.

additional measures, including revised rules for commercial charbroiling and conservation management practices (CMPs) for agricultural operations, are expected to achieve 1.3 tpd of direct $PM_{2.5}$ emission reductions in 2024.[430] New or revised District measures are thus expected to achieve a significant portion of the State's and District's 2.2 tpd direct $PM_{2.5}$ emission reduction commitment for the 2024 attainment year.

For example, the 2018 $PM_{2.5}$ Plan shows that approximately one fourth of the direct $PM_{2.5}$ emission reductions that the State and District have committed to achieve by 2024 (0.53 of 2.2 tpd) are expected to result from a planned revision to the District's commercial charbroiling rule (Rule 4692) that would contain control requirements for under-fired charbroilers (UFCs).[431] The District anticipates proposing this revised rule to the SJVUAPCD Governing Board in 2020 and implementing it beginning in 2024.[432] According to information provided in Appendix C of the 2018 $PM_{2.5}$ Plan, the costs associated with retrofitting control technology onto equipment at existing restaurants and maintaining such equipment can be prohibitively expensive, especially for smaller restaurants.[433] Because of ongoing uncertainties about the technological and economic feasibility of controls for UFCs, the District has adopted a set of registration and reporting provisions in a revised version of Rule 4692 that required owners and operators of commercial cooking operations with UFCs to register each unit and to submit, by January 1, 2019, a one-time informational report providing information about the UFC and its operations. CARB submitted this revised rule to the EPA on November 16, 2018.

The 2018 $PM_{2.5}$ Plan also shows that a portion of the necessary direct $PM_{2.5}$ emission reductions in 2024 (0.32 of 2.2 tpd) is expected to result from a revised version of the District's CMP rule (Rule 4550), which is designed to reduce particulate emissions from agricultural operations.[434] The District anticipates proposing this revised rule to the SJVUAPCD Governing Board in 2022 and implementing it beginning in 2024.[435] As explained in Appendix C of the 2018 $PM_{2.5}$ Plan, an important step in developing effective $PM_{2.5}$ controls for dust from agricultural operations is to develop an understanding of the effectiveness of CMPs on controlling $PM_{2.5}$ emissions in the Valley.'' [436] Towards this end, the District intends to work with stakeholders and researchers to evaluate the feasibility and effectiveness of additional control measures to reduce $PM_{2.5}$ emissions, including: Tilling and other land preparation activities; selection of conservation tillage as a CMP for croplands; and CMPs on fallow lands that are tilled or otherwise worked with implements of husbandry (*e.g.,* a farm tractor drawing a trailer with crops) to reduce windblown PM emissions from disturbed fallowed acreage.[437]

b. Quantitative Milestones

Appendix H of the 2018 $PM_{2.5}$ Plan identifies December 31 milestone dates for the 2017, 2020, and 2023 milestone years and for the 2026 post-attainment milestone year.[438] Appendix H also identifies target emissions levels to meet the RFP requirement for direct $PM_{2.5}$ and NO_X emissions for each of these milestone years,[439] as shown in Table 10, above, and control measures that the State or District plan to implement by each of these years, in accordance with the control strategy in the Plan.[440]

The Plan includes quantitative milestones for mobile, stationary, and area sources. For mobile sources, the State has developed quantitative milestones that provide for evaluation of RFP based on the implementation of specific control measures by the relevant three-year milestones. For the first three quantitative milestones, the Plan provides for evaluating RFP with implementation of regulatory measures; for the final post attainment date quantitative milestone in 2026, the Plan provides for evaluating RFP with implementation of incentive measures.[441] For the 2017, 2020, and 2023 milestone years, the quantitative milestones include implementation of the Truck and Bus Regulation, which requires particulate filters and cleaner engines on existing trucks and buses, in the years preceding each milestone year (*i.e.,* between 2012–2017, 2017–2020, and 2020–2023, respectively). Each of these milestone years also includes action on or implementation of certain State measures for light-duty vehicles and non-road vehicles as follows:

- 2017—Truck and Bus Regulation, ACC Program, and Off-Road Regulation;
- 2020—Truck and Bus Regulation, ACC 2: Reduced ZEV Brake and Tire Wear, and Heavy-Duty Vehicle Inspection and Maintenance Program; and
- 2023—Truck and Bus Regulation and the California Low-NO_X Engine Standard for new on-road heavy-duty engines in medium- and heavy-duty trucks bought in California.

For 2026, the Plan's quantitative milestone includes an update on the State's implementation of two incentive programs, specifically, identification of the number of trucks and buses turned over to low-NO_X or cleaner engines due to the State's Accelerated Turnover of Trucks and Buses Measure, and identification of the number of pieces of agricultural equipment replaced with Tier 4 engines due to the State's Accelerated Turnover of Agricultural Equipment Measure.[442]

For stationary and area sources, the District has developed quantitative milestones that similarly include updates on a combination of regulatory measures and incentive measures. For 2017, the District's quantitative milestones are to report on its implementation of six District measures: 2014 amendments to Rule 4901 (''Wood Burning Fireplaces and Wood Burning Heaters'') and certain incentive programs for direct $PM_{2.5}$, Rule 4308 (''Boilers, Steam Generators, and Process Heaters (0.075 to <2 MMBtu)''), 2011 amendments to Rule 4354 (''Glass Melting Furnaces''), 2013 amendments to Rule 4702 (''Internal Combustion Engines''), Rule 4902 (''Residential Water Heaters''), and Rule 4905 (''Natural Gas-fired, Fan-type, Residential Central Furnaces'').[443]

For the 2020, 2023, and 2026 milestone years, the District's quantitative milestones are to report on the status of measures proposed and/or adopted during the preceding three years according to the schedule in the Plan.[444] Consistent with the State and District's control strategy in Chapter 4 of the 2018 $PM_{2.5}$ Plan, the District's quantitative milestones include updates on the status of the District's residential wood burning strategy (both the 2019 amendments to Rule 4901 and incentive

[430] Id. at Table 4–3.

[431] Id. at 4–19, 4–2 and Table 4–3.

[432] Id. at Table 4–4.

[433] Id. at C–209 to C–210.

[434] Id. at Table 4–3.

[435] Id. at Table 4–4.

[436] The District is holding a series of workshops from January to March 2020 with the stated goal of ''assisting growers and dairy families in understanding and complying with District Rule 4550.'' SJVUAPCD, ''Notice of Public Hearing for Adoption of Proposed 2018 $PM_{2.5}$ Plan for the 1997, 2006, and 2012 Standards,'' available at *https://www.valleyair.org/Workshops/postings/2020/2020_CMP/notice.pdf.*

[437] Id. at C–203.

[438] 2018 $PM_{2.5}$ Plan, App. H, Table H–12.

[439] Id. at Table H–5.

[440] Id. at H–22 to H–23 (for State milestones) and H–19 to H–20 (for District milestones).

[441] Id. at H–22 to H–23.

[442] 2018 $PM_{2.5}$ Plan, App. H, H–22.

[443] Id. at H–19.

[444] Id. at H–19 to H–20.

projects for residential wood burning devices), the District's incentive-based strategy for commercial under-fired charbroilers, and the regulatory measures scheduled for SJVUAPCD Board consideration during the three years preceding the following milestone years:

- 2020—Rule 4311 (''Flares), Rules 4306/4320 (large boilers, steam generators, and process heaters), Rule 4702 (''Internal Combustion Engines''), and Rule 4692 (''Commercial Under-fired Charbroilers''); and
- 2023—Rules 4354 (''Glass Melting Furnaces''), 4352 (''Solid Fuel-Fired Boilers, Steam Generators and Process Heaters''), and Rule 4550 (''Conservation Management Practices'').[445]

We note that CARB submitted its 2017 Quantitative Milestone Report to the EPA on December 20, 2018.[446] This report includes a certification that CARB and the District met the 2017 quantitative milestones for the San Joaquin Valley for the 2006 $PM_{2.5}$ NAAQS and discusses the State's and District's progress on implementing the three CARB measures and six District measures identified in Appendix H as quantitative milestones for the 2017 milestone year.

3. EPA's Evaluation and Proposed Action

a. Reasonable Further Progress

We have evaluated the RFP demonstration in Appendix H of the 2018 $PM_{2.5}$ Plan and, for the following reasons, propose to find that it satisfies the statutory and regulatory requirements for RFP. First, the Plan contains an anticipated implementation schedule for the attainment control strategy, including all BACM, BACT, and MSM control measures and the State's and District's aggregate tonnage commitments, as required by 40 CFR 51.1012(a)(1). The implementation schedule is found in Table 4–4, Table 4–5, and Table 4–8 of the 2018 $PM_{2.5}$ Plan and in Table H–2 of Appendix H. The 2018 $PM_{2.5}$ Plan documents the State's and District's conclusion that they are implementing all BACM, BACT, and MSM for direct $PM_{2.5}$ and NO_X emissions in the Valley as expeditiously as practicable.[447]

Second, the RFP demonstration contains projected emission levels for direct $PM_{2.5}$ and NO_X for each applicable milestone year as required by 40 CFR 51.1012(a)(2). These projections are based on continued implementation of the existing control measures in the area (*i.e.,* baseline measures), recent revisions to the District's residential wood burning rule (Rule 4901), and commitments to achieve additional reductions from new measures in 2024, and reflect full implementation of the State's, District's, and MPOs' attainment control strategy for these pollutants. With regard to the 2026 milestone year, we note that the projection is based on reductions from baseline measures and on an assumption that the amount of reductions from new control measures that will be achieved in 2026 is the same as those achieved in 2024 and 2025.

Third, the projected emissions levels based on the implementation schedule in the Plan demonstrate that the control strategy will achieve reasonable further progress toward attainment between the 2013 baseline year and the 2024 attainment year as required by 40 CFR 51.1012(a)(3). Tables 11 and 12 of this proposed rule show decreases in emissions levels in each milestone year, leading to the achievement of the reductions required for attainment in 2024. Although the direct $PM_{2.5}$ emissions increase slightly (0.1 tpd) over attainment year levels in the 2026 post-attainment milestone year, we expect that this small emissions increase will have de minimis impacts on the area's attainment and maintenance of the NAAQS.

Finally, the RFP demonstration shows that overall pollutant emissions will be at levels that reflect stepwise progress between the base year and the attainment year and provides a justification for the selected implementation schedule, as required by 40 CFR 51.1012(a)(4). The steeper decline in emissions in 2024 is primarily due to a commitment by the State and District to achieve reductions from new control measures beginning in 2024. The State's and District's justifications for their selected implementation schedules, *i.e.,* for the delay to 2024 in their respective commitments to achieve emissions reductions from new or revised control measures, include the time needed for rulemaking processes, the time needed for industry to comply with new regulatory requirements, the need to resolve feasibility issues for emerging technologies, and the time needed to prepare technologies and infrastructure for market-scale adoption.

We note that although both the State and District have committed to propose to their respective boards certain new or revised control measures in the years leading up to the 2024 attainment year, the only enforceable commitment in the Plan that requires adoption of control measures is the tonnage commitment for 2024, which provides the basis for the stepwise approach to RFP. Because of the size of the tonnage commitments for the 2024 attainment year, and the absence of commitments to adopt measures or achieve emission reductions in earlier years, we request comment on whether additional enforceable commitments for regulatory action to implement emission controls in the interim years (*i.e.,* in 2022 or 2023) are necessary to ensure that the stepwise approach to emission reductions in the Plan is consistent with reasonable further progress toward expeditious attainment. Such commitments may include commitments to achieve specified amounts of emission reductions before 2024 (*i.e.,* aggregate tonnage commitments) or commitments to adopt specific new or revised control measures by specific dates before 2024, and may provide a basis for reducing the size of the total tonnage commitment for the 2024 attainment year.

b. Quantitative Milestones

Appendix H of the 2018 $PM_{2.5}$ Plan identifies milestone dates (*i.e.,* December 31 of 2017, 2020, 2023, and 2026) that are consistent with the requirements of 40 CFR 51.1013(a)(4) and target emissions levels for direct $PM_{2.5}$ and NO_X to be achieved by these milestone dates through implementation of the Plan's control strategy. These target emission levels and associated control requirements provide for objective evaluation of the area's progress towards attainment of the 2006 24-hour $PM_{2.5}$ NAAQS.

The State's quantitative milestones in Appendix H are to take action on or to implement specific measures listed in the State's control measure commitments that apply to heavy-duty trucks and buses, light-duty vehicles, and non-road equipment sources and may provide substantial reductions in emissions of direct $PM_{2.5}$ and NO_X from mobile sources in the San Joaquin Valley. Similarly, the District's quantitative milestones in Appendix H are to take action on or to implement specific measures listed in the District's control measure commitments that apply to sources such as residential wood burning, commercial charbroiling, conservation management practices,

[445] 2018 $PM_{2.5}$ Plan, Ch. 4, Tables 4–4 and 4–5.

[446] Letter from Richard W. Corey, Executive Officer, CARB, to Michael Stoker, Regional Administrator, EPA Region IX, with attachment, December 20, 2018.

[447] The BACM/BACT and MSM control strategy that provides the basis for these emissions projections is described in Chapter 4, App. C, and App. D of the 2018 $PM_{2.5}$ Plan.

glass melting furnaces, and internal combustion engines and that may provide substantial reductions in emission of direct $PM_{2.5}$ and NO_X from stationary sources. These milestones provide an objective means for tracking the State's and District's progress in implementing their respective control measure and aggregate tonnage commitments and, thus, provide for objective evaluation of the San Joaquin Valley's progress toward timely attainment.

For these reasons, we propose to determine that the SJV $PM_{2.5}$ Plan satisfies the requirements for quantitative milestones in CAA section 189(c) and 40 CFR 51.1013 for the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley.

F. Motor Vehicle Emission Budgets

1. Statutory and Regulatory Requirements

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 (''Transportation Conformity Rule''). 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 (MVEBs or ''budgets'') contained in all control strategy plans applicable to the area. An attainment or maintenance plan for the $PM_{2.5}$ NAAQS should include budgets for the attainment year, each required RFP milestone year, or the last year of the maintenance plan, as appropriate, for direct $PM_{2.5}$ and $PM_{2.5}$ precursors subject to transportation conformity analyses. 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.[448]

Under the $PM_{2.5}$ SIP Requirements Rule, Serious area $PM_{2.5}$ attainment plans must include appropriate quantitative milestones and projected RFP emission levels for direct $PM_{2.5}$ and all $PM_{2.5}$ plan precursors in each milestone year.[449] For an area designated nonattainment for the 2006 $PM_{2.5}$ NAAQS before January 15, 2015, the attainment plan must contain quantitative milestones to be achieved no later than three years after December 31, 2014, and every 3 years thereafter until the milestone date that falls within three years after the applicable attainment date.[450] As the EPA explained in the preamble to the $PM_{2.5}$ SIP Requirements Rule, it is important to include a post-attainment year quantitative milestone to ensure that, if the area fails to attain by the attainment date, the EPA can continue to monitor the area's progress toward attainment while the state develops a new attainment plan.[451] Although the post-attainment year quantitative milestone is a required element of a Serious area plan, it is not necessary to demonstrate transportation conformity for 2026 or to use the 2026 budgets in transportation conformity determinations until such time as the area fails to attain the 2006 $PM_{2.5}$ NAAQS.

$PM_{2.5}$ plans should identify budgets for direct $PM_{2.5}$, NO_X and all other $PM_{2.5}$ precursors for which 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. With respect to $PM_{2.5}$ from re-entrained road dust and emissions of VOC, SO_2, and/or ammonia, the transportation conformity provisions of 40 CFR part 93, subpart A, apply only if the EPA Regional Administrator or the director of the state air agency has made a finding that emissions of these pollutants within the area are a significant contributor to the $PM_{2.5}$ nonattainment problem and has so notified the MPO and Department of Transportation (DOT), or if the applicable implementation plan (or implementation plan submission) includes any of these pollutants in the approved (or adequate) budget as part of the RFP, attainment, or maintenance strategy.[452]

By contrast, transportation conformity requirements apply with respect to emissions of NO_X unless both the EPA Regional Administrator and the director of the state air agency have made a finding that transportation-related emissions of NO_X within the nonattainment area are not a significant contributor to the $PM_{2.5}$ nonattainment problem and have so notified the MPO and DOT, or the applicable implementation plan (or implementation plan submission) does not establish an approved (or adequate) budget for such emissions as part of the RFP, attainment, or maintenance strategy.[453]

It is not always necessary for states to establish motor vehicle emissions budgets for all of the $PM_{2.5}$ precursors. The $PM_{2.5}$ SIP Requirements Rule allows a state to demonstrate that emissions of certain precursors do not contribute significantly to $PM_{2.5}$ levels that exceed the NAAQS in a nonattainment area, in which case the state may exclude such precursor(s) from its control evaluations for the specific NAAQS at issue. If a state successfully demonstrates that the emissions of one or more of the $PM_{2.5}$ precursors from all sources do not contribute significantly to $PM_{2.5}$ levels in the subject area, then it is not necessary to establish motor vehicle emissions budgets for that precursor(s).

Alternatively, the transportation conformity regulations contain criteria for determining whether emissions of one or more $PM_{2.5}$ precursors are insignificant for transportation conformity purposes.[454] For a pollutant or precursor to be considered an insignificant contributor based on the transportation conformity rule's criteria, the control strategy SIP must demonstrate that it would be unreasonable to expect that such an area would experience enough motor vehicle emissions growth in that pollutant and/or precursor for a NAAQS violation to occur. Insignificance determinations are based on factors such as air quality, SIP motor vehicle control measures, trends and projections of motor vehicle emissions, and the percentage of the total attainment plan emissions inventory for the NAAQS at issue that is comprised of motor vehicle

[448] 40 CFR 93.118(e)(4)(v).

[449] 40 CFR 51.1012(a), 51.1013(a)(1).

[450] 40 CFR 51.1013(a)(4) and 81 FR 58010, 58058 and 58063–58064 (August 24, 2016).

[451] 81 FR 58010, 58063–58064.

[452] 40 CFR 93.102(b)(3), 93.102(b)(2)(v), and 93.122(f); see also Conformity Rule preamble at 69 FR 40004, 40031–36 (July 1, 2004).

[453] 40 CFR 93.102(b)(2)(iv).

[454] 40 CFR 93.109(f).

emissions. The EPA's rationale for providing for insignificance determinations is described in the July 1, 2004 revision to the Transportation Conformity Rule.[455]

Transportation conformity trading mechanisms are allowed under 40 CFR 93.124 where a state establishes appropriate mechanisms for such trades. The basis for the trading mechanism is the SIP attainment modeling that establishes the relative contribution of each $PM_{2.5}$ precursor pollutant. The applicability of emission trading between conformity budgets for conformity purposes is described in 40 CFR 93.124(c).

The EPA's process for determining the adequacy of a budget consists of three basic steps: (1) Notifying the public of a SIP submittal; (2) providing the public the opportunity to comment on the budgets during a public comment period; and (3) making a finding of adequacy or inadequacy.[456] The EPA can notify the public by either posting an announcement that the EPA has received SIP budgets on the EPA's adequacy website (40 CFR 93.118(f)(1)), or through a **Federal Register** notice of proposed rulemaking when the EPA reviews the adequacy of an implementation plan budget simultaneously with its review and action on the SIP itself (40 CFR 93.118(f)(2)).

2. Summary of State's Submission

The 2018 $PM_{2.5}$ Plan includes budgets for direct $PM_{2.5}$ and NO_X emissions for each RFP milestone year (2017, 2020, and 2023), the projected attainment year (2024), and one post-attainment year quantitative milestone (2026).[457] The Plan establishes separate direct $PM_{2.5}$ and NO_X subarea budgets for each county, or partial county (for Kern County), in the San Joaquin Valley.[458] CARB calculated the budgets using EMFAC2014,[459] CARB's latest version of the EMFAC model for estimating emissions from on-road vehicles operating in California that was available at the time of Plan development, and the latest modeled vehicle miles traveled and speed distributions from the San Joaquin Valley MPOs from the Final 2017 Federal Transportation Improvement Plan, adopted in September 2016. The budgets reflect winter average emissions because those emissions are linked with the District's attainment demonstration for the 2006 24-hour $PM_{2.5}$ NAAQS.

Consistent with the requirements set forth in the $PM_{2.5}$ SIP Requirements Rule, the SJV $PM_{2.5}$ Plan contains RFP budgets for 2026, which is the year following the attainment year. As explained below, we are not taking action on the 2026 budgets at this time. The EPA is also not reviewing the submitted motor vehicle emissions budgets for 2017. These budgets would not be used in any future transportation conformity determinations because the plan contains budgets for 2020 and other years in the future.

The direct $PM_{2.5}$ budgets include tailpipe, brake wear, and tire wear emissions but do not include paved road dust, unpaved road dust, and road construction dust emissions.[460] The State did not include budgets for VOC, SO_2, or ammonia. As discussed in section IV.B of this preamble, the State submitted a $PM_{2.5}$ precursor demonstration documenting that control of these precursors would not significantly contribute to attainment of the 2006 $PM_{2.5}$ NAAQS, and the EPA is proposing to approve the precursor demonstration. Therefore, if the EPA approves the demonstration, the State would not be required to submit budgets for these precursors. The State included a discussion of the significance/insignificance factors for ammonia, SO_2, and VOC, which would demonstrate a finding of insignificance under the transportation conformity rule.[461] The State is not required to include re-entrained road dust in the budgets under section 93.103(b)(3) unless the EPA or the State has made a finding that these emissions are significant. Neither the State nor the EPA has made such a finding. The Plan does include a discussion of the significance/insignificance factors for re-entrained road dust.[462] The budgets included in the 2018 $PM_{2.5}$ Plan are shown in Table 14.

TABLE 14—MOTOR VEHICLE EMISSION BUDGETS FOR THE SAN JOAQUIN VALLEY FOR THE 2006 $PM_{2.5}$ STANDARD

[Winter average, tpd]

Budget year	2017		2020		2023		2024		2026	
	$PM_{2.5}$	NO_X	$PM_{2.5}$	NO_X	$PM_{2.5}$	NO_X	$PM_{2.5}$	NO_X	$PM_{2.5}$	NO_X
Fresno	0.9	29.3	0.9	25.9	0.8	15.5	0.8	15.0	0.8	14.3
Kern	0.8	28.7	0.8	23.8	0.7	13.6	0.7	13.4	0.8	12.8
Kings	0.2	5.9	0.2	4.9	0.2	2.9	0.2	2.8	0.2	2.7
Madera	0.2	5.5	0.2	4.4	0.2	2.6	0.2	2.5	0.2	2.3
Merced	0.3	11.0	0.3	9.1	0.3	5.5	0.3	5.3	0.3	4.9
San Joaquin	0.7	15.5	0.6	12.3	0.6	7.9	0.6	7.6	0.6	6.9
Stanislaus	0.4	12.3	0.4	9.8	0.4	6.2	0.4	6.0	0.4	5.6

Source: 2018 $PM_{2.5}$ Plan, Appendix D, Table 3–2. Budgets are rounded to the nearest tenth of a ton.
Note: We are not proposing any action at this time on the 2017 RFP or the 2026 post-attainment year RFP budgets.

In the submittal letter for the 2018 $PM_{2.5}$ Plan, CARB requested that the EPA limit the duration the approval of the budgets to the period before the effective date of the EPA's adequacy finding for any subsequently submitted budgets.[463]

Conformity Trading Mechanism

The 2018 $PM_{2.5}$ 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 direct $PM_{2.5}$ emissions. For the 2006 $PM_{2.5}$ NAAQS, the State is proposing to use

[455] 69 FR 40004.

[456] 40 CFR 93.118(f).

[457] 2018 $PM_{2.5}$ Plan, App. D, Table 3–2.

[458] 40 CFR 93.124(c) and (d).

[459] EMFAC is short for *EM*ission *FAC*tor. The EPA announced the availability of the EMFAC2014 model for use in state implementation plan development and transportation conformity in California on December 14, 2015. The 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.

[460] 2018 $PM_{2.5}$ Plan, App. D, D–122 to D–123.

[461] 40 CFR 93.109(f).

[462] 2018 $PM_{2.5}$ Plan, App. D, D–121 and D–122.

[463] Letter dated May 9, 2019, from Richard W. Corey, Executive Officer, CARB to Mike Stoker, Regional Administrator, EPA Region 9, 3.

the 2:1 NO_X: $PM_{2.5}$ ratio. The ratio is based on a sensitivity analysis based on a 30% reduction of NO_X or $PM_{2.5}$ emissions and the corresponding impact on design values at sites in Bakersfield and Fresno.

To ensure that the trading mechanism does not affect the ability of the San Joaquin Valley 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.[464] The Plan also provides that the San Joaquin Valley MPOs shall clearly document the calculations used in the trading, along with any additional reductions of NO_X and $PM_{2.5}$ emissions in the conformity analysis.

3. EPA's Evaluation and Proposed Action

The EPA generally first conducts a preliminary review of budgets submitted with an attainment or maintenance plan for $PM_{2.5}$ for adequacy, prior to taking action on the plan itself, and did so with respect to the $PM_{2.5}$ budgets in the 2018 $PM_{2.5}$ Plan. On June 18, 2019, the EPA announced the availability of the 2018 $PM_{2.5}$ Plan with MVEBs and a 30-day public comment period. This announcement was posted on the EPA's Adequacy website at: *https://www.epa.gov/state-and-local-transportation/state-implementation-plans-sip-submissions-currently-under-epa.* The comment period for this notification ended on July 18, 2019. We did not receive any comments during this comment period.

Based on our proposal to approve the State's demonstration that emissions of ammonia, SO_2, and VOCs do not contribute significantly to $PM_{2.5}$ levels that exceed the 2006 $PM_{2.5}$ NAAQS in the San Joaquin Valley, as discussed in section IV.B of this preamble, and the information about ammonia, SO_2, and VOC emissions in the Plan, the EPA proposes to find that it is not necessary to establish motor vehicle emissions budgets for transportation-related emissions of ammonia, SO_2, and VOC to attain the 2006 24-hour $PM_{2.5}$ NAAQS in the San Joaquin Valley. Based on the information about re-entrained road dust in the Plan and in accordance with 40 CFR 93.102(b)(3), the EPA proposes to find that it is not necessary to include re-entrained road dust emissions in the budgets for 2006 24-hour $PM_{2.5}$ NAAQS in the San Joaquin Valley.

For the reasons discussed in sections IV.D and IV.E of this proposed rule, the EPA is proposing to approve the RFP and attainment demonstrations, respectively, in the 2018 $PM_{2.5}$ Plan. The 2020 and 2023 RFP budgets and 2024 attainment budgets, as shown in Table 14 of this preamble, 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 40 CFR 93.118(e)(4) and (5). For these reasons, the EPA proposes to approve the budgets listed in Table 14. We provide a more detailed discussion in section IV of the EPA's General Evaluation TSD. We are not proposing to approve the 2017 budget or the post-attainment year 2026 RFP budget at this time. The budgets that the EPA is proposing to approve relate to the 2006 24-hour $PM_{2.5}$ NAAQS only, and our proposed approval does not affect the status of the previously-approved MVEBs for the 1997 $PM_{2.5}$ NAAQS and related trading mechanism, which remain in effect for that $PM_{2.5}$ NAAQS.

Although the post-attainment year quantitative milestone is a required element of the Serious area plan, it is not necessary to demonstrate transportation conformity for 2026 or to use the 2026 budgets in transportation conformity determinations until such time as the area fails to attain the 2006 $PM_{2.5}$ NAAQS. Therefore, the EPA is not taking action on the submitted budgets for 2026 in the SJV $PM_{2.5}$ Plan at this time. Additionally, the EPA has not yet started the adequacy process for the 2026 budgets.

If the EPA were either to find adequate or to approve the post-attainment milestone year budgets now, those budgets would have to be used in transportation conformity determinations that are made after the effective date of the adequacy finding or approval even if the San Joaquin Valley ultimately attains the $PM_{2.5}$ NAAQS by the Serious area attainment date. This would mean that the San Joaquin Valley MPOs would be required to demonstrate conformity for the post-attainment date milestone year and all later years addressed in the conformity determination (*e.g.,* the last year of the metropolitan transportation plan) to the post-attainment date RFP budgets rather than the budgets associated with the attainment year for the area (*i.e.,* the budgets for 2024). The EPA does not believe that it is necessary to demonstrate conformity using these post-attainment year budgets in areas that either the EPA anticipates will attain by the attainment date or in areas that attain by the attainment date.

If and when the EPA determines that the San Joaquin Valley has failed to attain the 2006 24-hour $PM_{2.5}$ NAAQS by the applicable attainment date, the EPA would begin the budget adequacy and approval processes for the post-attainment year (2026) budgets. If the EPA finds the 2026 budgets adequate or approves them, those budgets will have to be used in subsequent transportation conformity determinations. The EPA believes that initiating the process to act on the submitted post-attainment year MVEBs following a determination that the area has failed to attain by the Serious area attainment date ensures that transportation activities will not cause or contribute to new violations, increase the frequency or severity of any existing violations, or delay timely attainment or any required interim emission reductions or milestones in the San Joaquin Valley $PM_{2.5}$ nonattainment area, consistent with the requirements of CAA section 176(c)(1)(B).

As noted above, the State included a trading mechanism to be used in transportation conformity analyses that would be used in conjunction with the budgets in the 2018 $PM_{2.5}$ Plan, as allowed for under 40 CFR 93.124(b). 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 2:1 NO_X:$PM_{2.5}$ ratio. 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 San Joaquin Valley MPOs will have to document clearly the calculations used in the trading when demonstrating conformity, along with any additional reductions of NO_X and $PM_{2.5}$ emissions in the conformity analysis. The trading calculations must be performed prior to the final rounding to demonstrate conformity with the budgets.

The EPA has reviewed the trading mechanism as described on pages D–125 through D–127 in Appendix D of the 2018 $PM_{2.5}$ Plan and finds it is appropriate for transportation conformity purposes in the San Joaquin Valley for the 2006 24-hour $PM_{2.5}$ NAAQS. The methodology for estimating the trading ratio for conformity purposes is essentially an update (based on newer modeling) of the approach that the EPA previously approved for the 2008 $PM_{2.5}$ Plan for the 1997 $PM_{2.5}$ NAAQS[465] and the 2012

[464] 2018 $PM_{2.5}$ Plan, App. D, D–126 and D–127.

[465] 80 FR 1816, 1841 (January 13, 2015) (noting the EPA's prior approval of MVEBs for the 1997

Continued

$PM_{2.5}$ Plan for the 2006 24-hour $PM_{2.5}$ NAAQS.[466] The State's approach in the previous plans was to model the ambient $PM_{2.5}$ effect of areawide NO_X emissions reductions and of areawide direct $PM_{2.5}$ reductions, and to express the ratio of these modeled sensitivities as an interpollutant trading ratio.

In the updated analysis for the 2018 $PM_{2.5}$ plan, the State completed separate sensitivity analyses for the annual and 24-hour standards and modeled only transportation related sources in the nonattainment area. The ratio the State is proposing to use for transportation conformity purposes is derived from air quality modeling that evaluated the effect of reductions in transportation-related NO_X and $PM_{2.5}$ emissions in the San Joaquin Valley on ambient concentrations at the Bakersfield-California Avenue, Bakersfield-Planz, Fresno-Garland, and Fresno-Hamilton & Winery monitoring sites. The modeling that the State performed to evaluate the effectiveness of NO_X and $PM_{2.5}$ reductions on ambient 24-hour concentrations showed NO_X:$PM_{2.5}$ ratios that range from a high of 2.3 at the Bakersfield-California Avenue monitor to a low of 1.6 at the Fresno-Hamilton & Winery monitor.[467] We find that the State's approach is a reasonable method to use to develop ratios for transportation conformity purposes. We therefore propose to approve the 2:1 NO_X for $PM_{2.5}$ trading mechanism as enforceable components of the transportation conformity program for the San Joaquin Valley for the 2006 $PM_{2.5}$ NAAQS. If approved, this trading ratio will replace the 8:1 NO_X for $PM_{2.5}$ trading ratio approved for the San Joaquin Valley 2012 $PM_{2.5}$ Plan for the 2006 $PM_{2.5}$ NAAQS.

Under the transportation conformity rule, once budgets are approved, they cannot be superseded by revised budgets submitted for the same CAA purpose and the same year(s) addressed by the previously approved SIP until the EPA approves the revised budgets as a SIP revision. In other words, as a general matter, such approved budgets cannot be superseded by revised budgets found adequate, but rather only through approval of the revised budgets, unless the EPA specifies otherwise in its approval of a SIP by limiting the duration of the approval to last only until subsequently submitted budgets are found adequate.[468]

In the submittal letter for the SJV $PM_{2.5}$ Plan, CARB requested that we limit the duration our approval of the budgets to the period before the effective date of the EPA's adequacy finding for any subsequently submitted budgets.[469] The transportation conformity rule allows us to limit the approval of budgets.[470] However, we will consider a state's request to limit an approval of its MVEBs only if the request includes the following elements:[471]

- 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 period before new budgets have been found to be adequate for transportation conformity purposes.

CARB's request includes an explanation for why the budgets have become, or will become, outdated or deficient. In short, CARB has requested that we limit the duration of the approval of the budgets in light of the EPA's recent approval of EMFAC2017, an updated version of the model (EMFAC2014) used for the budgets in the 2018 $PM_{2.5}$ Plan.[472] EMFAC2017 updates vehicle mix and emissions data of the previously approved version of the model, EMFAC2014.

In light of the EPA's approval of EMFAC2017, CARB explains that the budgets in the 2018 $PM_{2.5}$ Plan, which we are proposing to approve in today's action, will become outdated and will need to be revised using EMFAC2017. In addition, CARB states that, without the ability to replace the budgets using the budget adequacy process, the benefits of using the updated data may not be realized for a year or more after the updated SIP (with the EMFAC2017-derived budgets) is submitted, due to the length of the SIP approval process. We find that CARB's explanation for limiting the duration of the approval of the budgets is appropriate and provides us with a reasonable basis for limiting the duration of the approval of the budgets.

We note that CARB has not committed to update the budgets as part of a comprehensive SIP update, but as a practical matter, CARB must submit a SIP revision that includes updated demonstrations as well as the updated budgets to meet the adequacy criteria in 40 CFR 93.118(e)(4).[473] Therefore, we do not need a specific commitment for such a plan at this time. For the reasons provided above, and in light of CARB's explanation for why the budgets will become outdated and should be replaced upon an adequacy finding for updated budgets, we propose to limit the duration of our approval of the budgets in the 2018 $PM_{2.5}$ Plan to the period before we find revised budgets based on EMFAC2017 to be adequate.

G. 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.[474] 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 NSR permit program meeting the requirements of CAA sections 172(c)(5) and 189(b)(3).[475] As part of our January 20, 2016 final action to reclassify the San Joaquin Valley area as Serious nonattainment for the 2006 $PM_{2.5}$ standards, we established a February 21, 2017 deadline for the State to submit nonattainment NSR SIP revisions addressing the requirements of CAA sections 189(b)(3) and 189(e) of the Act for the 2006 $PM_{2.5}$ NAAQS, to the extent those requirements had not already been met by the nonattainment NSR SIP revisions due May 7, 2016 for purposes of implementing the 1997 $PM_{2.5}$ NAAQS.[476]

California submitted nonattainment NSR SIP revisions to address the subpart 4 requirements for the San

annual and 24-hour $PM_{2.5}$ standards in the 2008 $PM_{2.5}$ Plan at 76 FR 69896).

[466] 81 FR 59876 (August 31, 2016).

[467] 2018 $PM_{2.5}$ Plan, App. D, D–126.

[468] 40 CFR 93.118(e)(1).

[469] Letter dated May 9, 2019, from Richard W. Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region 9, 3.

[470] 40 CFR 93.118(e)(1).

[471] 67 FR 69141 (November 15, 2002), limiting our prior approval of MVEBs in certain California SIPs.

[472] On August 15, 2019, the EPA approved and announced the availability of EMFAC2017, the latest update to the EMFAC model for use by the State and local governments to meet CAA requirements. 84 FR 41717.

[473] Under 40 CFR 93.118(e)(4), the EPA will not find a budget in a submitted SIP to be adequate unless, among other criteria, the budgets, when considered together with all other emissions sources, are consistent with applicable requirements for RFP and attainment. 40 CFR 93.118(e)(4)(iv).

[474] General Preamble at 13539 and 13541–42.

[475] 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)).

[476] 81 FR 2993, 2994 (January 20, 2016) and 40 CFR 52.245(e).

Joaquin Valley Serious $PM_{2.5}$ nonattainment area on November 20, 2019.[477] We are not proposing any action on this submission at this time. We will act on this submission through a separate rulemaking, as appropriate.

V. Summary of Proposed Actions and Request for Public Comment

For the reasons discussed in this proposed rule, under CAA section 110(k)(3), the EPA proposes to approve, as a revision to the California SIP, the following portions of the SJV $PM_{2.5}$ Plan for the 2006 $PM_{2.5}$ NAAQS:

- The 2013 base year emission inventories (CAA section 172(c)(3));
- the demonstration that BACM, including BACT, for the control of direct $PM_{2.5}$ and $PM_{2.5}$ plan precursors will be implemented no later than 4 years after the area was reclassified (CAA section 189(b)(1)(B));
- the demonstration (including air quality modeling) that the Plan provides for attainment as expeditiously as practicable but no later than December 31, 2024 (CAA sections 189(b)(1)(A) and 188(e));
- plan provisions that require RFP toward attainment by the applicable date (CAA section 172(c)(2));
- quantitative milestones that are to be achieved every three years until the area is redesignated attainment and that demonstrate RFP toward attainment by the applicable attainment date (CAA section 189(c));
- motor vehicle emissions budgets for 2020, 2023, and 2024 as shown in Table 14 of this proposed rule (CAA section 176(c) and 40 CFR part 93, subpart A); and
- the inter-pollutant trading mechanism provided for use in transportation conformity analyses for the 2006 $PM_{2.5}$ NAAQS, in accordance with 40 CFR 93.124(b).

The EPA is proposing to grant the State's request for extension of the Serious area attainment date from December 31, 2019, to December 31, 2024, based on a conclusion that the State has satisfied the requirements for such extensions in section 188(e) of the Act. We may, however, reconsider this proposal or deny California's request to extend the attainment date if the EPA concludes based on new information or public comments that the State has not satisfied the requirements for such extensions.

The EPA is soliciting public comments on the issues discussed in this document. We will accept comments from the public on this proposal for the next 30 days.

VI. Statutory and Executive Order Reviews

Under the Clean Air Act, the Administrator is required to approve a SIP submission that complies with the provisions of the Act and applicable federal regulations. 42 U.S.C. 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, the EPA's role is to approve state choices, provided that they meet the criteria of the Clean Air Act. Accordingly, this proposed action merely proposes to approve state plans as meeting federal requirements and does not impose additional requirements beyond those imposed by state law.

For these reasons, this proposed action:

- Is not a ''significant regulatory action'' subject to review by the Office of Management and Budget under Executive Orders 12866 (58 FR 51735, October 4, 1993) and 13563 (76 FR 3821, January 21, 2011);
- Is not an Executive Order 13771 (82 FR 9339, February 2, 2017) regulatory action because SIP approvals are exempted under Executive Order 12866;
- Does not impose an information collection burden under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*);
- Is certified as not having a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*);
- Does not contain any unfunded mandate or significantly or uniquely affect small governments, as described in the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4);
- Does not have Federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999);
- Is not an economically significant regulatory action based on health or safety risks subject to Executive Order 13045 (62 FR 19885, April 23, 1997);
- Is not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001);
- Is not subject to requirements of Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) because application of those requirements would be inconsistent with the Clean Air Act; and
- Does not provide the EPA with the discretionary authority to address disproportionate human health or environmental effects with practical, appropriate, and legally permissible methods under Executive Order 12898 (59 FR 7629, February 16, 1994).

In addition, 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. In those areas of Indian country, the proposed rule does not have tribal implications and will not impose substantial direct costs on tribal governments or preempt tribal law as specified by Executive Order 13175 (65 FR 67249, November 9, 2000).

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Ammonia, Carbon monoxide, Incorporation by reference, Intergovernmental relations, Nitrogen dioxide, Ozone, Particulate matter, Reporting and recordkeeping requirements, Sulfur dioxide, Volatile organic compounds.

Authority: 42 U.S.C. 7401 *et seq.*

Dated: February 27, 2020.

John W. Busterud,

Regional Administrator, Region IX.

[FR Doc. 2020–05914 Filed 3–26–20; 8:45 am]

BILLING CODE 6560–50–P

[477] Letter dated November 15, 2019 from Richard W. Corey, Executive Officer, CARB, to Michael Stoker, Regional Administrator, EPA Region IX. California previously submitted nonattainment NSR SIP revisions for the San Joaquin Valley to address the subpart 4 requirements for Moderate $PM_{2.5}$ nonattainment areas, and the EPA approved these SIP revisions on September 17, 2014 (79 FR 55637).