

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA-R09-OAR-2021-0884; FRL-9292-01-R9]

Clean Air Plans; 2012 Fine Particulate Matter Serious 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 2012 annual 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 the State’s Serious area plan for the 2012 annual PM_{2.5} NAAQS, submitted May 10, 2019, for all Serious PM_{2.5} area requirements (except contingency measures), including emissions inventories, best available control measures, demonstrations of attainment and reasonable further progress, quantitative milestones, and motor vehicle emission budgets. We may, however, reconsider this proposal if, based on new information or public comments, we find that the State has not satisfied the statutory criteria for a Serious area PM_{2.5} attainment plan. The EPA also proposes to disapprove the portions of the State’s Serious area plan, and the contingency provisions of a third SIP submission regarding residential wood burning, that pertain to the Serious area contingency measurement requirements for the 2012 annual PM_{2.5} NAAQS.

DATES: Any comments must arrive by January 28, 2022.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA-R09-OAR-2021-0884, at <https://www.regulations.gov>. For comments submitted at [Regulations.gov](https://www.regulations.gov), follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from [Regulations.gov](https://www.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 for Proposed Action

On January 15, 2013, the EPA strengthened the primary annual NAAQS for particulate matter with a diameter of 2.5 microns or less (PM_{2.5}) by lowering the level from 15.0 micrograms per cubic meter (µg/m³) to 12.0 µg/m³ (“2012 annual PM_{2.5} NAAQS”).¹ The EPA established these

¹ 78 FR 3086 and 40 CFR 50.18. The EPA first established NAAQS for PM_{2.5} on July 18, 1997 (62 FR 38652), including annual standards of 15.0 µg/m³ based on a 3-year average of annual mean concentrations and 24-hour (daily) standards of 65 µg/m³ based on a 3-year average of 98th percentile 24-hour concentrations (40 CFR 50.7) (“1997 PM_{2.5} NAAQS”). In addition, on October 17, 2006, the EPA strengthened the 24-hour (daily) NAAQS for PM_{2.5} by lowering the level from 65 µg/m³ to 35 µg/m³ (“2006 24-hour PM_{2.5} NAAQS”). 71 FR 61144

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. Individuals particularly sensitive to PM_{2.5} exposure include older adults, people with heart and lung disease, and children.² Sources can emit PM_{2.5} directly into the atmosphere as a solid or liquid particle (“primary PM_{2.5}”) or it can form in the atmosphere (“secondary PM_{2.5}”) as a result of various chemical reactions among precursor pollutants such as nitrogen oxides (NO_x), sulfur oxides (SO_x), volatile organic compounds (VOC), and ammonia (NH₃).³

Following promulgation of a new or revised NAAQS, the EPA is required by CAA section 107(d) to designate areas throughout the nation as attaining or not attaining the NAAQS. On January 15, 2015, the EPA designated and classified the SJV as Moderate nonattainment for the 2012 annual PM_{2.5} NAAQS.⁴ The EPA has approved the State’s demonstration that it was impracticable to attain the 2012 annual PM_{2.5} NAAQS by the outermost December 31, 2021 Moderate area attainment date and related plan elements addressing the Moderate area requirements for the 2012 annual PM_{2.5} NAAQS, except for the contingency measure element, which the EPA disapproved.⁵ In that same action, the EPA reclassified the SJV as a Serious nonattainment area for these NAAQS.

On December 27, 2021, the effective date of the SJV’s reclassification as a Serious PM_{2.5} nonattainment area, the SJV will become subject to a new statutory attainment date no later than the end of the tenth calendar year following designation (*i.e.*, December

and 40 CFR 50.13. Unless otherwise noted, all references to the PM_{2.5} standards in this notice, including all instances of “2012 annual PM_{2.5} NAAQS,” are to the 2012 primary annual NAAQS of 12.0 µg/m³ codified at 40 CFR 50.18.

² 78 FR 3086, 3088.

³ EPA, Air Quality Criteria for Particulate Matter, No. EPA/600/P-99/002aF and EPA/600/P-99/002bF, October 2004.

⁴ 80 FR 2206 (codified at 40 CFR 81.305).

⁵ 86 FR 67343 (November 26, 2021).

31, 2025) 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 2012 annual PM_{2.5} NAAQS.⁶ As explained in the EPA's final reclassification action, the Serious area plan for the SJV 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 but no later than December 31, 2025, or by the most expeditious alternative date practicable and no later than December 31, 2030, in accordance with the requirements of CAA sections 189(b) and 188(e). As described in our final action reclassifying the SJV as a Serious PM_{2.5} nonattainment area, California must adopt and submit a SIP submission addressing the Serious nonattainment area requirements for the 2012 annual PM_{2.5} NAAQS within 18 months (*i.e.*, by June 27, 2023), for emissions inventories, BACM, and nonattainment new source review (NSR), and by December 31, 2023, for the attainment demonstration and related planning requirements.

The SJV PM_{2.5} nonattainment area encompasses over 23,000 square miles and includes all or part of eight counties: San Joaquin, Stanislaus, Merced, Madera, Fresno, Tulare, Kings, and the valley portion of Kern.⁷ The area is home to 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 CAA assigns primary responsibility to the state for developing plans to attain the NAAQS. Under State law, California divides this responsibility between the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD or District) and the California Air Resources Board (CARB) in preparing attainment plans. Authority for regulating sources under state jurisdiction in the SJV is split between the District, which has responsibility for regulating stationary and most area sources, and CARB, which has

responsibility for regulating most mobile sources.

II. Summary and Completeness Review of Applicable SIP Submissions

The EPA is proposing action on portions of three SIP revisions submitted by CARB to meet the Serious nonattainment area requirements for the 2012 annual PM_{2.5} NAAQS in the SJV. Specifically, the EPA is proposing to act on those portions of the following two plan submissions that pertain to the Serious area requirements for the 2012 annual 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");⁸ 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 in this proposal as the "SJV PM_{2.5} Plan" or "Plan." The SJV PM_{2.5} Plan addresses attainment plan requirements for multiple PM_{2.5} NAAQS in the SJV, including the Serious area attainment plan requirements for the 2012 annual PM_{2.5} NAAQS. CARB submitted the SJV PM_{2.5} Plan to the EPA as a revision to the California SIP on May 10, 2019.⁹ It became complete by operation of law on November 10, 2019.¹⁰

⁸ The 2018 PM_{2.5} Plan was developed jointly by CARB and the District.

⁹ Letter dated May 9, 2019, from Richard W. Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region IX. Previously, in separate rulemakings, the EPA has finalized action on the portions of the SJV PM_{2.5} Plan that pertain to the 1997 annual PM_{2.5} NAAQS, the 2006 24-hour PM_{2.5} NAAQS, and the Moderate area plan for the 2012 annual PM_{2.5} NAAQS. See 86 FR 67329 (November 26, 2021) (final rule regarding the 1997 annual PM_{2.5} NAAQS); 85 FR 44192 (July 22, 2020) (final rule regarding the 2006 24-hour PM_{2.5} NAAQS, except contingency measures); and 86 FR 67343 (final rule regarding the Moderate area plan for the 2012 annual PM_{2.5} NAAQS and contingency measures for the 2006 24-hour PM_{2.5} NAAQS). The EPA has also separately proposed action on the portions of the SJV PM_{2.5} Plan that pertain to the 1997 24-hour PM_{2.5} NAAQS. 86 FR 53150 (September 24, 2021).

¹⁰ We note that, with respect to plans previously required for the 1997, 2006, and 2012 PM_{2.5} NAAQS, including the Moderate area plan only for the 2012 annual PM_{2.5} NAAQS, the EPA had made findings of failure to submit effective January 7, 2019, that triggered sanctions clocks. 83 FR 62720 (December 6, 2018). Following the May 10, 2019 submission of the 2018 PM_{2.5} Plan and Valley State SIP Strategy, the EPA affirmatively determined that the SIP submissions addressed the deficiency that was the basis for such findings, resulting in the termination of the associated sanctions clocks. Letter dated June 24, 2020, from Elizabeth Adams, Director, Air and Radiation Division, EPA Region IX, to Richard W. Corey, Executive Officer, CARB. However, neither the findings nor completeness determination applied to the Serious area plan for

In addition, the EPA is proposing action on the portion of a third SIP submission that pertains to SJVUAPCD Rule 4901, as amended by the District on June 20, 2019, and submitted to the EPA on July 19, 2019 ("Rule 4901 Contingency Provision"). The EPA has already taken final action on the rule modification for this submission.¹¹ In this action we are evaluating the submission for purposes of addressing the contingency measures requirement in the SJV for the 2012 annual PM_{2.5} NAAQS.

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. San Joaquin Valley 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 2012 annual PM_{2.5} NAAQS in the SJV: (i) Chapter 4 ("Attainment Strategy for PM_{2.5}"); (ii) Chapter 7 ("Demonstration of Federal Requirements for the 2012 PM_{2.5} Standard");¹² (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

the 2012 annual PM_{2.5} NAAQS as it was not yet required.

¹¹ 85 FR 44206 (July 22, 2020) (final approval of District Rule 4901); 85 FR 1131, 1132–33 (January 9, 2020) (proposed approval of District Rule 4901). Completeness review for this submission was conducted and described in that action. See also 86 FR 67329 (removing the contingency provision from the SIP).

¹² Chapter 5 ("Demonstration of Federal Requirements for the 1997 PM_{2.5} Standard") and Chapter 6 ("Demonstration of Federal Requirements for the 2006 PM_{2.5} Standard") of the 2018 PM_{2.5} Plan pertain to the 1997 PM_{2.5} NAAQS and 2006 24-hour PM_{2.5} NAAQS, respectively.

⁶ *Id.* at 67347.

⁷ For a precise description of the geographic boundaries of the SJV PM_{2.5} nonattainment area, see 40 CFR 81.305.

Staff Report”);¹³ 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).¹⁴ The SJVUAPCD Governing Board Resolution 18–11–16 includes emission reduction commitments on which the SJV PM_{2.5} Plan relies.¹⁵

The appendices to the 2018 PM_{2.5} Plan, in order of their evaluation in this proposed rule, 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 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.¹⁶ CARB also provided

¹³ 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 W. Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region IX, transmitting the CARB Staff Report.

¹⁴ 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.

¹⁵ SJVUAPCD Governing Board Resolution 18–11–16, paragraph 6, 10–11.

¹⁶ SJVUAPCD, “Notice of Public Hearing for Adoption of Proposed 2018 PM_{2.5} Plan for the 1997,

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.¹⁷ 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.¹⁸ Therefore, we reaffirm 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, pursuant to CAA section 110(k)(1)(B).

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 SJV and Los Angeles-South Coast Air Basin (“South Coast”) ozone nonattainment areas.¹⁹ 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 SJV by 2025 from source categories under the regulatory authority of CARB. The resolution 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 all of the PM_{2.5} NAAQS for the SJV and to return to the Board with a commitment to achieve additional emission reductions from mobile sources.²⁰

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

2006, and 2012 Standards,” October 16, 2018, and SJVUAPCD Governing Board Resolution 18–11–16.

¹⁷ 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.

¹⁸ 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”).

¹⁹ The EPA has approved certain commitments made by CARB in the 2016 State Strategy for purposes of attaining the ozone NAAQS in the SJV and South Coast ozone nonattainment areas. See, e.g., 84 FR 3302 (February 12, 2019) and 84 FR 52005 (October 1, 2019).

²⁰ CARB Resolution 17–7, “2016 State Strategy for the State Implementation Plan,” March 23, 2017, 6–7.

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, 2018.²¹

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.²² 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 SJV.²³

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.²⁴ 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.²⁵ Therefore, we reaffirm 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, pursuant to CAA section 110(k)(1)(B).

C. Rule 4901 Contingency Provision

Lastly, the 2018 PM_{2.5} Plan addresses the contingency measure requirements for the 2012 annual PM_{2.5} NAAQS by reference to, among other things, a District contingency measure, and

²¹ Letter dated May 9, 2019, from Richard W. Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region IX, 2.

²² 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.

²³ CARB Resolution 18–49, “San Joaquin Valley Supplement to the 2016 State Strategy for the State Implementation Plan,” October 25, 2018, 5.

²⁴ 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.

²⁵ 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).

emissions estimates for the year following the attainment year for use in evaluating whether the emissions reductions from the contingency measure are sufficient.²⁶ With respect to the District contingency measure, the 2018 PM_{2.5} Plan calls for the District to amend District Rule 4901 (“Wood Burning Fireplaces and Wood Burning Heaters”) to include a provision in the rule with a trigger that would activate the requirements of the contingency measure should the EPA issue a determination or final rulemaking that the SJV failed to meet a regulatory requirement necessitating implementation of a contingency measure.

In response to the commitment made in the 2018 PM_{2.5} Plan, in June 2019 the District adopted amendments to Rule 4901, including a new provision (codified as section 5.7.3 of the amended rule) that is structured to function as a contingency measure. On July 19, 2019, CARB submitted the amended rule to the EPA for approval.²⁷ The EPA took final action to approve the amended Rule 4901 (including the new section 5.7.3) into the California SIP, but in our approval we noted that we were not evaluating the contingency measure in section 5.7.3 of revised Rule 4901 for compliance with all requirements of the CAA and the EPA’s implementing regulations that apply to such measures.²⁸ Rather, we approved the new provision (section 5.7.3) into the SIP as part of our approval of the entire amended rule as SIP strengthening because the provision strengthens the rule by providing a possibility of additional curtailment days and thus potentially additional emissions reductions. We indicated that we would evaluate whether section 5.7.3, in conjunction with other submitted provisions, meets the statutory and regulatory requirements for contingency measures in a future action.²⁹ In this document, we are evaluating District Rule 4901, and in particular section 5.7.3, in the context of our action on the contingency measure

element in the 2018 PM_{2.5} Plan for the 2012 annual PM_{2.5} NAAQS.

III. Clean Air Act 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:³⁰

(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 all PM_{2.5} precursors shall be implemented no later than four years after the area is reclassified (CAA section 189(b)(1)(B)), unless the state elects to make an optional precursor demonstration that the EPA approves authorizing the state not to regulate one or more of these pollutants;

(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, 2025, for the SJV for the 2012 annual PM_{2.5} NAAQS) (CAA sections 188(c)(2) and 189(b)(1)(A)(i));

(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”³¹ thresholds from 100 tons per year (tpy) to 70 tpy (CAA section 189(b)(3)).

A state’s Serious area plan 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 state’s 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”);³² (2) “State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990; Supplemental” (“General Preamble Supplement”);³³ 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”).³⁴ 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.³⁵ We discuss these regulatory requirements and interpretations of the Act as appropriate in our evaluation of the State’s submissions below.

³¹ 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).

³² 57 FR 13498 (April 16, 1992).

³³ 57 FR 18070 (April 28, 1992).

³⁴ 59 FR 41998 (August 16, 1994).

³⁵ 81 FR 58010.

²⁶ 2018 PM_{2.5} Plan, App. H (revised February 11, 2020), H–24 to H–26.

²⁷ Letter dated July 19, 2019, from Richard W. Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region IX.

²⁸ 85 FR 44206 (July 22, 2020) (final approval of District Rule 4901); 85 FR 1131, 1132–33 (January 9, 2020) (proposed approval of District Rule 4901).

²⁹ The EPA subsequently removed section 5.7.3 of Rule 4901 from the California SIP. 86 FR 67329 (final rule on 1997 annual PM_{2.5} NAAQS portion of the SJV PM_{2.5} Plan, including final disapproval of the contingency measures element for those NAAQS).

³⁰ 81 FR 58010, 58074–58075 (August 24, 2016).

IV. Review of the San Joaquin Valley PM_{2.5} Serious Area Plan

A. Emissions Inventory

1. Requirements for Emissions Inventories

CAA section 172(c)(3) requires that each SIP include a comprehensive, accurate, current inventory of actual emissions from all sources of the relevant pollutant or pollutants in the nonattainment area. The EPA discussed the emissions inventory requirements that apply to PM_{2.5} nonattainment areas, including Serious area requirements, in the PM_{2.5} SIP Requirements Rule and codified these requirements in 40 CFR 51.1008.³⁶ The EPA has also issued guidance concerning emissions inventories for PM_{2.5} nonattainment areas.³⁷

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,³⁸ and emissions of all chemical precursors to the formation of secondary PM_{2.5}: Nitrogen oxides (NO_x), sulfur dioxide (SO₂), volatile organic compounds (VOC), and ammonia (NH₃).³⁹ 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 plan submission.⁴⁰

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 it developed the submission. 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 EMFAC2014.⁴¹ Following CARB's submission of the Plan, the EPA approved EMFAC2017, the latest revision to this motor vehicle emissions model for SIP purposes.⁴² 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.⁴³

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.⁴⁴ These future emissions projections are necessary components of the attainment demonstration required under CAA section 189(b)(1) and the demonstration of RFP required under section 172(c)(2).⁴⁵ 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 it calculated the emissions projections. 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 occurring before the base year of an attainment plan, the projected emissions inventory used to develop the attainment demonstration must explicitly include

⁴¹ 80 FR 77337 (December 14, 2015). EMFAC is short for *Emission FACTor*. The EPA announced the availability of the EMFAC2014 motor vehicle emissions model, effective on the date of publication in the **Federal Register**, for use in state implementation plan development and transportation conformity in California. We note that CARB's use of EMFAC2014 in developing the emission inventories for the Serious area plan for the 2012 annual PM_{2.5} NAAQS preceded the requirement to adopt and submit such Serious area plan.

⁴² 84 FR 41717 (August 15, 2019).

⁴³ 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. "Miscellaneous Process Methodology 7.9 Entrained Road Travel, Paved Road Dust," CARB, November 2016.

⁴⁴ 40 CFR 51.1008 and 51.1012. Also, see Emissions Inventory Guidance, section 3 ("SIP Inventory Requirements and Recommendations").

⁴⁵ 40 CFR 51.1004, 51.1008, 51.1011, and 51.1012.

the emissions from such previously shutdown or curtailed emissions units.⁴⁶

Summary of State's Submission

The State included summaries of the planning emissions inventories for direct PM_{2.5} and all PM_{2.5} precursors (NO_x, SO_x,⁴⁷ VOC,⁴⁸ and ammonia) and the documentation for the inventories for the SJV PM_{2.5} nonattainment area in Appendix B ("Emissions Inventory") and Appendix I ("New Source Review and Emission Reduction Credits") of the 2018 PM_{2.5} Plan. In addition, Appendix J ("Modeling Emission Inventory") contains inventory documentation specific to the air quality modeling inventories. These portions of the 2018 PM_{2.5} Plan contain annual average daily emission inventories for 2013 through 2028 projected from the 2012 actual emissions inventory,⁴⁹ including the 2013 base year, the 2019 and 2022 RFP milestone years, the 2025 Serious area attainment year, and a 2028 post-attainment RFP year. The State used both the annual average and the winter average daily inventories to evaluate emission sources for the 2012 annual PM_{2.5} NAAQS in the 2018 PM_{2.5} Plan.⁵⁰

The State selected 2013 for the base year emission inventory, building on the 2012 actual emissions inventory and considering available air quality data, trends, and field studies.⁵¹ Specifically, the State worked with local air districts and selected 2012 for the actual emissions inventory as it aligned with the 2012 data collection year of the Multiple Air Toxics Exposure Study IV (MATES IV)⁵² of the South Coast Air Quality Management District (SCAQMD) and to maintain consistency across various California air quality plans.⁵³ The State then projected the

⁴⁶ 40 CFR 51.165(a)(3)(ii)(C)(1).

⁴⁷ The SJV PM_{2.5} Plan generally uses "sulfur oxides" or "SO_x" in reference to SO₂ as a precursor to the formation of PM_{2.5}. We use SO_x and SO₂ interchangeably throughout this notice.

⁴⁸ 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.

⁴⁹ 2018 PM_{2.5} Plan, App. B, B-18.

⁵⁰ Id. at App. B, B-19. The base year inventory is from CEIDARS and future year inventories were estimated using CEPAM, version 1.05.

⁵¹ Id. at App. L, 11-12.

⁵² Additional information on the MATES IV study performed in 2012 is available at: <https://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies/mates-iv>. SCAQMD performed the subsequent MATES V study in 2018 and issued the MATES V final report in August 2021. See <https://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies/mates-v>, and "MATES V, Multiple Air Toxics Exposure Study in the South Coast AQMD, Final Report," SCAQMD, August 2021.

⁵³ 2018 PM_{2.5} Plan, App. B, B-18.

³⁶ Id. at 58078-58079.

³⁷ EPA, "Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations," May 2017 ("Emissions Inventory Guidance"), available at <https://www.epa.gov/air-emissions-inventories/air-emissions-inventory-guidance-implementation-ozone-and-particulate>.

³⁸ 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.

³⁹ 40 CFR 51.1008.

⁴⁰ 40 CFR 51.1008(b)(1).

2013 base year emissions inventory (also referred to as the planning emissions inventory), presented in Appendix B of the Plan, from that 2012 actual emission inventory. Regarding the modeling emissions inventory, developed from the base year emissions inventory, the State conducted its base case modeling using 2013 for several reasons: Analysis of air quality trends, adjusted for meteorology, that indicated 2013 as a year conducive to ozone and PM_{2.5} formation; availability of research-grade measurements of two significant pollution episodes in the DISCOVER-AQ field study of January to February 2013; and the relatively high design values for 2013, making it a conservative choice for attainment modeling.⁵⁴

In addition, simultaneously with submission of the 2018 PM_{2.5} Plan, the State submitted the Moderate area plan for the SJV for the 2012 annual PM_{2.5} NAAQS, adopted by the District in 2016, that similarly used 2013 for the base year emissions inventory (“2016 PM_{2.5} Plan”). In that plan, the State included a modeling demonstration that it would be impracticable for the SJV to attain the 2012 annual PM_{2.5} NAAQS by the outermost Moderate area attainment date of December 31, 2021.⁵⁵ The modeling demonstration used three overlapping design value periods covering 2010–2014 and the 2013 base year emissions inventory to model the ambient air quality in 2021.

The State developed base year inventories in the 2018 PM_{2.5} Plan for stationary sources using actual emissions reports made by facility operators. The State developed the base

year emissions inventories for area sources using the most recent models and methodologies available at the time the State was developing the 2018 PM_{2.5} Plan.⁵⁶ The 2018 PM_{2.5} Plan 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}.⁵⁷ It provides filterable and condensable emissions estimates, expressed as annual PM_{2.5} emissions (tons per year), for all of the identified source categories for the years relevant for the 2012 annual PM_{2.5} NAAQS Serious area plan requirements, including the 2013 base year, the 2019 and 2022 RFP years, the 2025 Serious area attainment year, and a 2028 post-attainment RFP year.

CARB used EMFAC2014, which was the EPA-approved model at the time CARB developed and submitted the inventories, to estimate on-road motor vehicle emissions based on transportation activity data from the 2014 Regional Transportation Plans adopted by the transportation planning agencies in the SJV.⁵⁸ Re-entrained paved road dust emissions were calculated using a CARB methodology consistent with the EPA’s AP–42 road dust methodology.⁵⁹ CARB also provided emissions inventories for non-road equipment, including aircraft, trains, recreational boats, construction equipment, and farming equipment, among others. CARB uses a suite of category-specific models to estimate non-road emissions for many categories and, where a new model was not

available, used the OFFROAD2007 model.⁶⁰

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.⁶¹ In the 2018 PM_{2.5} Plan, the District provides for use of pre-base year ERCs as offsets by accounting for such ERCs in the projected emissions inventory for the 2025 attainment year.⁶² The 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 PM₁₀,⁶³ NO_x, SO_x, and VOC emissions by facility.⁶⁴

Table 1 provides a summary of the 2018 PM_{2.5} Plan’s winter (24-hour) average inventories in tpd of direct PM_{2.5} and PM_{2.5} precursor emissions for the 2013 base year. Table 2 provides a summary of the 2018 PM_{2.5} Plan’s annual average inventories of direct PM_{2.5} and PM_{2.5} precursor emissions for the 2013 base year. For purposes of this proposal, these annual average inventories provide bases primarily for our evaluation of the precursor demonstration, control measure analysis, attainment demonstration, RFP demonstration, and motor vehicle emissions budgets (“budgets”) in the 2018 PM_{2.5} Plan with respect to the Serious area attainment plan requirements for the 2012 annual PM_{2.5} NAAQS.

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.

⁵⁴ Id. at App. L, 12. The State presents further information in the “APPENDIX: San Joaquin Valley PM_{2.5} SIP (2018)” of Appendix L, and highlights that 2013 was one of the worst years in the decade preceding 2018 for PM_{2.5} pollution in the SJV, underscoring its use as a conservative base year for modeling attainment of the 2012 annual PM_{2.5} NAAQS. 2018 PM_{2.5} Plan, Ch. 7, 7–6.

⁵⁵ 2016 PM_{2.5} Plan, Ch. 2, section 2.3 (“Summary of Modeling Results”) and App. A (“Air Quality Modeling”). The EPA has summarized the State’s impracticability demonstration in greater detail in

our proposed rule on the 2016 PM_{2.5} Plan. 86 FR 49100, 49113 (September 1, 2021).

⁵⁶ 2018 PM_{2.5} Plan, App. B, section B.2 (“Emissions Inventory Summary and Methodology”).

⁵⁷ Id. at App. B, B–42 to B–44.

⁵⁸ Id. at App. B, B–37. We note that the vehicle miles traveled data used in the 2018 PM_{2.5} Plan’s emissions inventory is from the final 2017 Federal Transportation Improvement Program from each of the SJV’s eight metropolitan planning organizations.

⁵⁹ Id. at App. B, B–28.

⁶⁰ Id. at App. B, B–38 through B–40. 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.

⁶¹ Id. at App. B, B–19.

⁶² Id. at App. I, I–1 through I–5.

⁶³ Particulate matter with a diameter of 10 microns or less.

⁶⁴ 2018 PM_{2.5} Plan, App. I, tables I–1 through I–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.

EPA Evaluation and Proposed Action

The inventories in the 2018 PM_{2.5} Plan include the latest version of California's mobile source emissions model, EMFAC2014, that the EPA had approved at the time the State made the SIP submissions, and the EPA's most recent AP-42 methodology for paved road dust. The inventories comprehensively address all source categories in the SJV PM_{2.5} nonattainment area and are consistent with the EPA's inventory guidance.

In accordance with 40 CFR 51.1008(b)(1), the EPA has evaluated the State's justification for using 2013 for the base year emissions inventory as a technically appropriate inventory year for the 2012 annual PM_{2.5} NAAQS Serious area plan for the SJV. In particular, the State describes the technical bases for the selection of 2013 for the modeling emissions inventory, explaining that 2013 was conducive to PM_{2.5} formation in the SJV; the important DISCOVER-AQ field study measured two significant pollution episodes in the SJV in January to February 2013; and the 2013 design values (across monitoring sites) were relatively high in comparison to other recent years,⁶⁵ making it a conservative choice for future air quality projections for RFP and attainment of the 2012 annual PM_{2.5} NAAQS. We agree that these points make 2013 both a conservative year for modeling future air quality and one that aligns the comprehensive, accurate, and recent emissions inventory at the time the State developed and submitted the 2018 PM_{2.5} Plan with empirical data from the DISCOVER-AQ field study.

The EPA's approval of the State's demonstration that it was impracticable to attain the 2012 annual PM_{2.5} NAAQS by 2021 and reclassification of the SJV

to Serious for the 2012 annual PM_{2.5} NAAQS was based foremost on the State's modeled demonstration.⁶⁶ While we also considered the 2018–2020 design values (across monitoring sites) as part of our evaluation, such ambient air quality data was not available in 2017–2018 when CARB and the District were developing the 2018 PM_{2.5} Plan.

Therefore, the EPA proposes to find the State's justification for selecting 2013 for the base year emissions inventory to be technically appropriate, consistent with 40 CFR 51.1008(b)(1). Furthermore, the 2013 base year 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 estimated by the State and propose to find them acceptable and thus conclude that the future baseline emissions projections in the 2018 PM_{2.5} Plan reflect appropriate calculation methods and the latest planning assumptions at the time the State and District were developing the Plan and its emissions inventory. 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 and area sources, the related rules must be approved by the EPA into the SIP.

In our rulemaking on the State's attainment plan for the 2006 24-hour PM_{2.5} NAAQS in the SJV, we reviewed the baseline measures identified as 2018

PM_{2.5} Plan baseline controls to ensure that the measures that are relied upon in the plan are submitted and approved as part of the California SIP.⁶⁷ We reaffirm that the stationary and area source baseline measures in the 2018 PM_{2.5} Plan are approved into the SIP and support the emissions reductions for future years in the SJV, with two exceptions discussed in section IV.F.3.a of the proposed rule that would not materially affect the attainment demonstration in the Plan. With respect to mobile sources, the EPA has acted in recent years to approve CARB mobile source regulations into the state-wide portion of the California SIP.⁶⁸ We therefore propose to find that the future year baseline projections in the 2018 PM_{2.5} Plan are properly supported by SIP-approved stationary, area, and mobile source measures.⁶⁹

⁶⁷ EPA Region IX, "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 V-A of EPA's General Evaluation TSD shows District rules with post-2013 compliance dates that are reflected in the future year baseline inventories of the 2018 PM_{2.5} Plan, along with information on the EPA's approval of these rules.

⁶⁸ See, e.g., 81 FR 39424 (June 16, 2016), 82 FR 14447 (March 21, 2017), and 83 FR 23232 (May 18, 2018).

⁶⁹ The baseline emissions projections in the 2018 PM_{2.5} Plan assume implementation of CARB's zero emissions vehicle (ZEV) sales mandate and greenhouse gas (GHG) standards, based on the EMFAC2014 model that was the current EPA-approved model available at the time of the SIP's development and the assumptions that were available at that time. On September 27, 2019, the U.S. Department of Transportation and the EPA (the Agencies) issued the joint action known as the "Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program" ("SAFE I") that, among other things, withdrew the EPA's 2013 waiver of preemption of CARB's ZEV sales mandate and vehicle GHG standards. 84 FR 51310 (September 27, 2019). See also proposed SAFE rule at 83 FR 42986 (August 24, 2018). On April 30, 2020 (85 FR 24174), the Agencies issued a notice of final rulemaking for the "The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks" ("SAFE II"), establishing the federal fuel economy and GHG vehicle emissions standards based on the

⁶⁵ EPA design value workbook dated May 24, 2021, "pm25_designvalues_2018_2020_final_05_24_21.xlsx," worksheets "Table3a."

⁶⁶ 86 FR 67343, 67345. See also, 86 FR 49100, 49117–49118 (proposed rule on State's Moderate area plan).

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 future year baseline inventories in the 2018 PM_{2.5} Plan satisfy the requirements of 40 CFR 51.1008(b)(2) and 51.1012(a)(2) and provide an adequate basis for the control measure, attainment, and RFP demonstrations for the 2012 annual PM_{2.5} NAAQS in the 2018 PM_{2.5} Plan.

B. PM_{2.5} Precursors

Requirements for Control of PM_{2.5} Precursors

The provisions of subpart 4 of part D, title I of the CAA do not define the term “precursor” for purposes of PM_{2.5}, nor do they explicitly require the control of any specifically identified PM precursor. The statutory definition of “air pollutant” in CAA section 302(g), 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.” The EPA has identified NO_x, SO₂, VOC, and ammonia as precursors to the formation of PM_{2.5}.⁷⁰ 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., in CAA section 189(e)).

Section 189(e) of the Act requires that the control requirements for major stationary sources of direct PM₁₀ (which includes PM_{2.5}) also apply to major stationary sources of PM₁₀ precursors, except where the Administrator determines that such sources do not contribute significantly to PM₁₀ 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), reasonably available control technology (RACT), BACM, BACT, most stringent measures (MSM), and nonattainment NSR). Although section

August 2018 SAFE proposal. The effect of both SAFE final rules (SAFE I and SAFE II) on the on-road vehicle mix in the SJV nonattainment area and on the resulting vehicular emissions is expected to be minimal during the timeframe addressed in this SIP revision. Therefore, we anticipate the SAFE final rules would not materially change the demonstration of attainment of the 2012 annual PM_{2.5} NAAQS in the SJV by the Serious area attainment date of December 31, 2025.

⁷⁰ 81 FR 58010, 58018.

189(e) explicitly addresses only major stationary sources, the EPA interprets the Act as authorizing it also to determine, under appropriate circumstances, that regulation of specific PM_{2.5} precursors from other source categories in a given nonattainment area is not necessary. For example, under the EPA’s longstanding interpretation of the control requirements that apply to stationary and mobile sources of PM₁₀ precursors in the nonattainment area under CAA section 172(c)(1) and subpart 4,⁷¹ 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 PM₁₀ levels in the nonattainment area.⁷²

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.⁷³ 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.⁷⁴

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.⁷⁵ The EPA developed recommended

⁷¹ General Preamble, 13539–13542.

⁷² Courts have upheld this approach to the requirements of subpart 4 for PM₁₀. See, e.g., *Assoc. of Irrigated Residents v. EPA, et al.*, 423 F.3d 989 (9th Cir. 2005).

⁷³ 40 CFR 51.1006(a)(1).

⁷⁴ Id.

⁷⁵ “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 Standards (OAQPS), EPA to Regional Air Division Directors, Regions 1–10, EPA. The 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. “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.

contribution thresholds to help assess whether a precursor significantly contributes to PM_{2.5} levels above the NAAQS. The thresholds are based on the size of PM_{2.5} differences that are distinguishable statistically in monitored data. If the chemical component of PM_{2.5} ambient concentrations corresponding to emissions of a precursor (e.g., the concentration of sulfate, which corresponds to SO₂ emissions) is below the threshold, that is evidence that the precursor does not significantly contribute. If the precursor fails this concentration-based test, the State can use a sensitivity-based test, in which the modeled sensitivity or response of ambient PM_{2.5} concentrations to changes in emissions of the precursor is estimated and then compared to the threshold. In addition to comparing the concentration or modeled response to the threshold, the State can consider other information in assessing whether the precursor significantly contributes. The EPA’s recommended annual average contribution threshold for the annual PM_{2.5} NAAQS is 0.2 µg/m³.⁷⁶

We are evaluating the 2018 PM_{2.5} Plan with respect to the Serious area attainment plan requirements in accordance with the presumption embodied within subpart 4 that the State must address all PM_{2.5} precursors in its 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 in accordance with the PM_{2.5} Precursor Guidance.

Summary of State’s Submission

The State’s precursor demonstration and conclusions are found in Chapter 7 (“Demonstration of Federal Requirements for 2012 PM_{2.5} Standard”) and Appendix G (“Precursor Demonstration”) of the 2018 PM_{2.5} Plan. CARB also provides clarifying information on its precursor assessment, including an Attachment A to its letter transmitting the 2018 PM_{2.5} Plan to the

⁷⁶ PM_{2.5} Precursor Guidance, 17.

EPA⁷⁷ and further clarifications in five email transmittals.⁷⁸

The State estimates that anthropogenic emissions of NO_x, ammonia, SO_x, and VOC will decrease by 64 percent (%), 1%, 6%, and 9%, respectively, between 2013 and 2025.⁷⁹ The 2018 PM_{2.5} Plan provides both concentration-based and sensitivity-based analyses of precursor contributions to ambient PM_{2.5} concentrations in the SJV. Based on these analyses, the State concludes that emissions of NO_x (as well as direct PM_{2.5}) contribute significantly to ambient PM_{2.5} levels that exceed the PM_{2.5} NAAQS in the SJV but ammonia, SO_x, and VOC do not contribute significantly to such exceedances.

We summarize the State's analyses and conclusions for ammonia, SO_x, and VOC in the following paragraphs. For a more detailed summary of the precursor demonstration in the Plan, please refer to two EPA technical support documents (TSDs): The first covers all the precursors and the second one specifically addresses ammonia. The first TSD is 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"), which provides the EPA's summary of the State's precursor analyses for all four PM_{2.5} precursors. Most of our analysis in the EPA's PM_{2.5} Precursor TSD is applicable to the portion of the Plan pertaining to the Serious area plan for the 2012

annual PM_{2.5} NAAQS. For example, the State's precursor demonstration used 2015 annual average concentration data for its concentration-based analysis, examined both 24-hour and annual average sensitivities of ambient PM_{2.5} concentrations to reductions in each precursor in 2013, 2020, and 2024, and presented information on research studies and emission trends that are relevant for assessing the sensitivity of both 24-hour average and annual average ambient PM_{2.5} concentrations to emission reductions of each PM_{2.5} precursor. Our evaluation of such factors, as described in the EPA's PM_{2.5} Precursor TSD, is similarly applicable for the 2012 annual PM_{2.5} NAAQS.

With respect to ammonia emission reductions, the EPA's PM_{2.5} Precursor TSD summarizes the State's analysis of 24-hour average sensitivity of ambient PM_{2.5} concentrations across monitoring sites and years (see Table 2 of the EPA's PM_{2.5} Precursor TSD). The EPA's second TSD, "Technical Support Document, EPA Evaluation of Ammonia Precursor Demonstration, San Joaquin Valley Moderate Area PM_{2.5} Plan for the 2012 PM_{2.5} NAAQS," August 2021 ("EPA's Ammonia Precursor TSD"), summarizes the annual average sensitivity of ambient PM_{2.5} concentrations to ammonia emission reductions (see Table 2 of the EPA's Ammonia Precursor TSD) and provides further summary and context with respect to the State's ammonia precursor demonstration for the 2012 annual PM_{2.5} NAAQS.

For ammonia, SO_x, and VOC, CARB assesses the 2015 annual average concentration of each precursor in ambient PM_{2.5} at Bakersfield, for which the necessary speciated PM_{2.5} data was available and where the highest PM_{2.5} design values have been recorded in most years, and compares those concentrations to the recommended annual average contribution threshold of 0.2 µg/m³.⁸⁰ CARB concludes that the 2015 annual average contributions of ammonia, SO_x, and VOC are 5.2 µg/m³, 1.6 µg/m³ and 6.2 µg/m³, respectively.

For ammonia, SO_x, and VOC, the State modeled the sensitivity of ambient PM_{2.5} to 30% and 70% reductions in anthropogenic emissions of each precursor pollutant for modeled years 2013, 2020, and 2024. The year 2013 is the 2018 PM_{2.5} Plan's base year; 2020 is the modeled attainment year for the

1997 PM_{2.5} NAAQS; and 2024 is the modeled attainment year for the 2006 24-hour PM_{2.5} NAAQS. For the 2012 annual PM_{2.5} NAAQS, the modeled attainment year is 2025, but the State did not conduct precursor sensitivity modeling for that additional year. Instead the State assumed that 2024 and 2025 would have very similar results;⁸¹ and results for 2024 were used as a proxy for those of 2025. Emissions totals for those two years are within 0.2% of each other for all pollutants, except that NO_x emissions are 3% lower in 2025.⁸² Depending on the analysis year and percentage precursor emission reduction, the sensitivity of ambient PM_{2.5} to reductions in annual average precursor emissions ranges from 0.08 µg/m³ to 2.30 µg/m³ for ammonia; from -0.05 µg/m³ to 0.15 µg/m³ for SO_x; and from -0.50 µg/m³ to 0.40 µg/m³ for VOC.⁸³

For ammonia, the modeled sensitivity of ambient PM_{2.5} levels to a 30% or 70% emission reduction exceeds 0.2 µg/m³ in certain years at specific monitoring sites. As discussed in section IV.B.3.a of this proposed rule, for the 30% reduction results for 2024, upon which the State primarily relied, 2 out of 15 monitoring sites have responses above the threshold and the ambient PM_{2.5} response declines substantially from 2020 to 2024, with the decline being generally larger for the sites with the highest projected PM_{2.5} levels. In contrast, for SO_x and VOC, the modeled sensitivity of ambient PM_{2.5} levels to a 30% or 70% emission reduction in either precursor is below 0.2 µg/m³ in all model scenarios except one, including a disbenefit (*i.e.*, ambient PM_{2.5} levels increase when precursor emissions are reduced) at some monitoring sites for both precursors. For 2013, the State's modeling shows an ambient PM_{2.5} change greater than 0.2 µg/m³ at 7 out of 15 monitoring sites in response to a 70% VOC emission reduction. According to the State, however, such sensitivity results do not reflect the current atmospheric chemistry in the SJV given the projected emission reductions from 2013 to 2024 for all four PM_{2.5} precursors, especially for VOC and NO_x, as further described in this proposed rule.

⁷⁷ Letter dated May 9, 2019, from Richard W. 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").

⁷⁸ 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"); 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"); email dated April 19, 2021, from Laura Carr, CARB, to Rory Mays, EPA Region IX, Subject: "Ammonia update," with attachment "Update on Ammonia in the San Joaquin Valley" ("CARB's April 19, 2021 Precursor Clarification"); and email dated April 26, 2021, from Laura Carr, CARB, to Scott Bohning, EPA Region IX, Subject: "RE: Ammonia update," with attachment "Ammonia in San Joaquin Valley" ("CARB's April 26, 2021, Precursor Clarification").

⁷⁹ 2018 PM_{2.5} Plan, Ch. 7, 7-5 and Table 7-2. We also note that a copy of the contents of the 2018 PM_{2.5} Plan, App. G appears in the CARB Staff Report, App. C4 ("Precursor Demonstrations for Ammonia, SO_x, and ROG").

⁸⁰ 2018 PM_{2.5} Plan, App. G, 3. The 2018 PM_{2.5} 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. 2018 PM_{2.5} Plan, Ch. 3, 3-3 to 3-4.

⁸¹ *Id.* at Ch. 7, 7-7, and App. G, 10.

⁸² 2018 PM_{2.5} Plan, App. B. As discussed below, the lower NO_x emissions in 2025 compared to 2024 mean that the PM_{2.5} response to ammonia reductions would be lower than those stated in the Plan's precursor demonstration; using 2024 results is more conservative than using 2025 results.

⁸³ *Id.* at App. G, tables 2 through 7 for ammonia, tables 8 and 9 for SO_x, and tables 10 through 15 for VOC.

The State supplemented the sensitivity analysis, particularly for ammonia, with consideration of additional information such as emission trends, the appropriateness of future year versus base year sensitivity, available emission controls, and the severity of nonattainment.⁸⁴ These factors were identified in the then-available Draft PM_{2.5} Precursor Guidance, as well as in the final PM_{2.5} Precursor Guidance, as factors that may be relevant to a sensitivity-based contribution analysis.⁸⁵

The State notes that a 53% reduction in (baseline) NO_x emissions is projected to occur between 2013 and 2024,⁸⁶ so the conditions in the early years will not persist and the future year is more representative of the Valley's ambient conditions than earlier years. The 2018 PM_{2.5} Plan's precursor demonstration also presents a review of District agricultural rules that control VOC emissions and also provide ammonia co-benefits. The State concludes that a 30% reduction is a reasonable upper bound on the ammonia reductions to model. Finally, the 2018 PM_{2.5} Plan's precursor demonstration presents extensive support for the State's conclusion regarding an ambient excess of ammonia relative to NO_x, *i.e.*, that particulate ammonium nitrate formation is NO_x-limited, and will become increasingly NO_x-limited as NO_x reductions increase into the future.

EPA Evaluation and Proposed Action

The EPA has evaluated the State's precursor demonstration in the 2018 PM_{2.5} Plan, as well as other relevant information available to the EPA, 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 with the State's conclusion that NO_x emissions contribute significantly to ambient PM_{2.5} levels that exceed the 2012 annual PM_{2.5} NAAQS in the SJV 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. Additionally, for the reasons provided in the following paragraphs, the EPA proposes to approve the State's comprehensive precursor demonstrations for ammonia, SO_x, and VOC based on a conclusion that emissions of these precursor pollutants

do not contribute significantly to ambient PM_{2.5} levels that exceed the 2012 annual PM_{2.5} NAAQS in the SJV.

The State based its analyses on the latest available data and studies concerning ambient PM_{2.5} formation in the SJV from precursor emissions. For the required concentration-based analysis, the State assessed the absolute annual average contribution of each precursor to ambient PM_{2.5} (*i.e.*, in 2015). Given that the absolute concentrations in 2015 were above the EPA's recommended contribution thresholds for both the 24-hour and annual average PM_{2.5} NAAQS, the State proceeded to a sensitivity-based analysis, consistent with the PM_{2.5} SIP Requirements Rule.

For the sensitivity-based analysis, the State performed its analyses based on the EPA's recommended approach—*i.e.*, for each modeled year and level of precursor emissions reduction (in percentages), 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 EPA's recommended contribution threshold. In particular, the State considered the EPA's recommended range of emission reductions (30% to 70%) for the 2013 base year, 2020 (an interim year), and the 2024 future year, and quantified the estimated response of ambient PM_{2.5} concentrations to precursor emission changes in the SJV.

The State's emissions projections in the 2018 PM_{2.5} Plan show that baseline emissions of each of these precursors will decrease from the 2013 base year to both 2021 and 2025. These decreases are included in the State's modeled projections of ambient PM_{2.5} levels in the SJV for purposes of demonstrating attainment and RFP. The State's sensitivity analyses are consistent with these projections, in accordance with the EPA's recommendations in the PM_{2.5} Precursor Guidance.⁸⁷

In the subsections that follow, we summarize our evaluation of the State's precursor demonstrations for ammonia, SO_x, and VOC for purposes of the 2012 annual PM_{2.5} NAAQS in the SJV.

(a) Ammonia Precursor Demonstration

In the 2018 PM_{2.5} Plan, CARB estimates the ambient PM_{2.5} response to both a 30% and a 70% emissions reduction in 2013, 2020, and 2024. We have evaluated CARB's sensitivity-based contribution analyses for 2013, 2020, and 2024 (in the 2018 PM_{2.5} Plan) and CARB's determination that 2024 results are representative of conditions in the

SJV for purposes of a sensitivity-based analysis, as discussed in the following paragraphs. The EPA's PM_{2.5} Precursor Guidance explicitly provides for consideration of a future year, such as the attainment year.⁸⁸ We consider it appropriate for the State to take into account additional information as part of its evaluation of whether the ammonia contribution is significant and to rely on the responses to the 30% modeled ammonia emissions reduction in its precursor demonstration for ammonia. The State primarily relied on the 30% reduction results after concluding that 30% was a reasonable upper bound on potential ammonia reductions, based on past research on ammonia emissions and potential control options for agricultural sources. The EPA agrees that this is a reasonable upper bound on ammonia emissions reductions to use in the precursor demonstration, as discussed in EPA's approval of the precursor demonstration for the 2006 24-hour PM_{2.5} NAAQS.⁸⁹ We provide a detailed evaluation of the State's precursor demonstration for ammonia emissions in the EPA's Ammonia Precursor TSD.

The precursor demonstration in the 2018 PM_{2.5} Plan indicates that the ambient response to a 30% ammonia emission reduction would exceed the EPA's recommended contribution threshold of 0.2 µg/m³ for 14 out of 15 monitoring sites in the 2013 analysis year, and at 9 out of 15 for the 2020 analysis year. For the 2024 analysis year, 2 of the 15 sites would exceed the contribution threshold, Madera and Hanford. In absolute terms, the ambient PM_{2.5} response declines from 0.24 µg/m³ in 2020 to 0.12 µg/m³ in 2024 at Bakersfield-Planz, the highest concentration site. The Madera and Hanford responses decline, respectively, from 0.36 to 0.21 µg/m³, and from 0.42 to 0.26 µg/m³. The average response over all monitoring sites declines from 0.23 µg/m³ to 0.14 µg/m³, with the decline being generally larger for the sites with the highest projected PM_{2.5} levels.

While the Madera and Hanford responses to ammonia reductions are above the contribution threshold, additional information about these locations leads the EPA to give these responses lower weight in the overall assessment of whether ammonia contributes significantly to PM_{2.5} levels. The State notes that the 2013 base year Madera monitored concentrations are

⁸⁴ *Id.* at App. G, 5.

⁸⁵ 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).

⁸⁶ 2018 PM_{2.5} Plan, App. G, 8.

⁸⁷ PM_{2.5} Precursor Guidance, 35.

⁸⁸ *Id.*

⁸⁹ 85 FR 17382 (March 27, 2020), 17395; EPA's PM_{2.5} Precursor TSD, 13.

biased high,⁹⁰ which would lead to model estimates of the response to ammonia reductions that are biased high (because for model projections, relative responses of the model to emissions changes are applied to monitored concentrations). While the State did not discuss the evidence for this in detail in its 2018 PM_{2.5} Plan, it is consistent with an analysis of Madera measured concentrations that the State provided in a prior PM_{2.5} plan for the SJV.⁹¹ The EPA has previously discussed that the Madera data for the limited period of 2011 to 2013 are not representative for purposes of an attainment demonstration.⁹²

For the 2018 PM_{2.5} Plan precursor demonstration, Madera's ambient PM_{2.5} response in 2024 to a 30% ammonia emissions reduction was 0.21 µg/m³, just 5% above EPA's recommended contribution threshold of 0.2 µg/m³. Because the 2024 modeling starting point was a base design value using monitored concentrations from 2010–2014, if more typical Madera concentrations were used, it is likely that the 2024 Madera response to ammonia reductions would be below the contribution threshold. Moreover, given the NO_x emission reductions that are projected to continue from 2024 to 2025, the EPA expects that PM_{2.5} sensitivity to ammonia reductions would decrease from the 0.21 µg/m³ unadjusted value in 2024 to a lower value in 2025, likely decreasing even the unadjusted, biased-high value to below the threshold.

There is also information suggesting that the Hanford response to ammonia reductions may be lower than indicated in the State's 2018 PM_{2.5} Plan precursor demonstration. An independent study using aircraft and surface data from the winter 2013 DISCOVER-AQ⁹³

campaign, a key period in the 2018 PM_{2.5} Plan's 2013 base year, found that the Community Multiscale Air Quality (CMAQ) model underestimated ammonia at Hanford by roughly a factor of five; Hanford is just outside a region with high ammonia emissions in the model (western Tulare County).⁹⁴ If the model's ammonia concentrations were higher to better match observations, then there would be relatively more ammonia per NO_x; ammonia then would be less of a limiting factor for particulate ammonium nitrate formation and the model response to ammonia reductions would be lower. This phenomenon is described more fully below.

The 2018 PM_{2.5} Plan did not include an evaluation of model performance for ammonia per se (just for particulate ammonium), but in supplemental transmittals⁹⁵ CARB described the results of two analyses confirming the likely underestimation of ammonia. CARB compared CMAQ model predictions of ammonia with the 2013 DISCOVER-AQ aircraft measurements and found that ammonia was underpredicted, and noted that this would result in the PM_{2.5} response to ammonia reductions being overpredicted. CARB also compared 2017 satellite measurements of ammonia with CMAQ model predictions and found that modeled ammonia concentrations were half of the magnitude of the satellite observations at some locations, and the modeled average in the SJV was about 25% less than observed. CARB concluded that the model tends to overpredict the sensitivity of ammonium nitrate formation to ammonia emission reductions. CARB also speculated that the underprediction could be partly explained by the underestimation of ammonia emissions using current methodologies.⁹⁶ If modeled ammonia concentrations were closer to observations, *e.g.*, via increased

Observations Relevant to Air Quality," described at https://www.nasa.gov/mission_pages/discover-aq/index.html.

⁹⁴ Kelly, J.T. *et al.* 2018, "Modeling NH₄NO₃ over the San Joaquin Valley during the 2013 DISCOVER-AQ campaign." *Journal of Geophysical Research: Atmospheres*, 123, 4727–4745, <https://doi.org/10.1029/2018JD028290> at 4733. The paper notes that, despite the ammonia underestimation, model performance was good for particulate ammonium nitrate and the ammonium nitrate was not sensitive to the ammonia underestimation since its formation was NO_x-limited.

⁹⁵ CARB's April 19, 2021, Precursor Clarification and CARB's April 26, 2021, Precursor Clarification.

⁹⁶ As discussed in EPA's Ammonia Precursor TSD, there is evidence that ammonia emissions are underestimated, based on comparisons between satellite measurements and what would be expected from emissions inventories.

emissions in the model, then the modeled response to ammonia precursor reductions would be lower than shown in the 2018 PM_{2.5} Plan's precursor demonstration. An increase in modeled ambient ammonia (such as via a larger emissions estimate) would also make the model response more consistent with the evidence from the ambient measurement studies that are discussed next.

As additional information for assessing the contribution of ammonia to PM_{2.5}, the State discussed evidence from multiple ambient measurement studies.⁹⁷ The studies suggest a very low ambient sensitivity to ammonia, based on measured excess ammonia relative to NO_x, the abundance of particulate nitrate relative to gaseous NO_x, and the large abundance of ammonia relative to nitric acid. The studies all conclude that there is a large amount of ammonia left over after reacting with NO_x, so that ammonia emission reductions would be expected mainly to reduce the amount of ammonia excess, rather than to reduce the particulate ammonium nitrate. These ambient studies provide strong evidence independent of the modeling that PM_{2.5} would respond only weakly to ammonia emissions reductions.

Another consideration is that the PM_{2.5} benefit of ammonia emission reductions is projected to decline steeply over time. In selecting the analysis year for a precursor demonstration, we believe it is appropriate to consider changes in atmospheric chemistry that may occur between the base or current year and the attainment year because the changes may ultimately affect the nonattainment area's progress toward expeditious attainment. The PM_{2.5} Precursor Guidance explicitly states that a future year may be used, and that there are a multitude of considerations in choosing the analysis year.⁹⁸ The "anticipated growth or loss of sources . . . or trends in ambient speciation data and precursor emissions"⁹⁹ are among the "facts and circumstances of the area"¹⁰⁰ to consider in determining the significance of a precursor. The Guidance states that a future year could be more appropriate if it better represents the period that sources will operate in. As discussed in more detail below, the 2024 model results better

⁹⁷ 2018 PM_{2.5} Plan, 6–7, and App. G, C–9 to G–10; the CARB 2018 Staff Report, App. C, 12–15; and Submittal Letter, Attachment A. These studies are also discussed in the EPA's PM_{2.5} Precursor TSD.

⁹⁸ PM_{2.5} Precursor Guidance, 35.

⁹⁹ *Id.* at 18.

¹⁰⁰ PM_{2.5} SIP Requirements Rule, 40 CFR 51.1006(a)(1)(ii).

⁹⁰ 2018 PM_{2.5} Plan, App. G, 14.

⁹¹ "Assessment of the Representativeness of 2011 PM_{2.5} Beta Attenuation Monitor Data from Madera," in "Staff Report, ARB Review of San Joaquin Valley PM_{2.5} State Implementation Plan," adopted by CARB on May 21, 2015, App. A, "Weight of Evidence Analysis."

⁹² 81 FR 6936, 6971 (February 9, 2016). The conclusion that 2011–2013 Madera data was biased high was based on it not fitting the north-south concentration gradient historically seen in relations to other monitors, a comparison to data from a second monitor at the same site, and the return to the historic pattern after adjustments were made to instrument operation after checking its zero point. The data is considered valid in the EPA's Air Quality System (AQS) for purposes of assessing whether the NAAQS is met. However, the EPA considered it to be anomalously high for that period, and not representative for use in modeling. Adjusted substituted data from nearby monitors had concentrations about 10% lower, and were accepted by the EPA for the demonstration of attainment of the 1997 annual PM_{2.5} NAAQS.

⁹³ NASA, "Deriving Information on Surface conditions from Column and Vertically Resolved

represent the period that ammonia sources will operate in, because of the steep decline in NO_x emissions projected to occur by 2024 and 2025. We consider it reasonable for the State to focus on the ambient PM_{2.5} response to ammonia emission reductions in 2024, rather than an earlier year, as the modeled response in 2024 in the SJV better reflects the potential benefit of ammonia control measures for purposes of expeditious attainment of the 2012 annual PM_{2.5} NAAQS.

The State's precursor demonstration in the 2018 PM_{2.5} Plan shows that ambient sensitivity to ammonia emission reductions in the SJV declines steeply over time. Between 2020 and 2024, the modeled response to a 30% ammonia emission reduction declines by 50% at the Bakersfield-Planz monitoring site, which has the highest projected PM_{2.5} level, and by 37% averaged over all monitoring sites.¹⁰¹ As noted above, in absolute terms, the ambient PM_{2.5} response declines from 0.24 µg/m³ in 2020 to 0.12 µg/m³ in 2024 at Bakersfield-Planz, which has the highest projected PM_{2.5} design value, and from 0.23 µg/m³ to 0.14 µg/m³ as averaged over all monitoring sites, with the decline being generally larger for the sites with the highest projected PM_{2.5} levels. Thus, between 2020 and 2024, the number of sites at which modeled sensitivity exceeds the 0.2 µg/m³ threshold declines from 9 out of 15 down to 1 or 2 out of 15.¹⁰² As discussed above, ammonia sensitivity declines because of the shifting atmospheric chemistry caused by NO_x emissions decreases. NO_x emissions are projected to decrease 27% between 2020 and 2024 due to baseline measures (*e.g.*, existing motor vehicle controls). The decreased NO_x emissions will make ammonia more abundant relative to NO_x, and even less of a limiting factor on PM_{2.5} formation. In other words, the model response in the future year 2024 gives a more realistic assessment of the potential effect of ammonia controls than past or current conditions.

Between 2024 and 2025, the attainment year, NO_x emissions are projected to decrease by an additional 3.5% from 2024 levels,¹⁰³ so that the response to ammonia reductions in the attainment

¹⁰¹ Extrapolating the 2018 PM_{2.5} Plan results to 2025, the percent declines are 55% and 40%, respectively, which are larger still than those for 2024.

¹⁰² 2018 PM_{2.5} Plan, App. G, tables 4 and 5, G–11. As discussed above, the response for the Madera site is likely below the contribution threshold since its monitored concentrations are biased high.

¹⁰³ Annual average NO_x emissions are projected to decrease from 148.9 tpd in 2024 to 143.7 tpd in 2025. 2018 PM_{2.5} Plan, App. B, Table B–2.

year would be lower than the 2024 results reported in the Plan.

Finally, based on the 2024 sensitivity results,¹⁰⁴ if ammonia emissions were reduced by 30%, the area's projected 12.0 µg/m³ design value, occurring at the Bakersfield-Planz monitoring site, would be reduced by 0.12 µg/m³, which would not be considered significant (it is below the EPA's recommended threshold of 0.2 µg/m³).

In sum, we conclude that the State quantified the sensitivity of ambient PM_{2.5} levels to reductions in ammonia emissions using appropriate modeling technique; the modeled response to ammonia reductions is likely lower than reported; and the State's choice of 2024 and 2025 as the reference points for purposes of evaluating the sensitivity of ambient PM_{2.5} levels to ammonia emission reductions is well-supported. 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 2012 annual PM_{2.5} NAAQS in the SJV.

(b) SO_x Precursor Demonstration

In the 2018 PM_{2.5} Plan, CARB estimated the 2013 ambient PM_{2.5} response to a 30% SO_x emission reduction to range from –0.01 µg/m³ to 0.07 µg/m³ and estimated the ambient PM_{2.5} response to a 70% SO_x emission reduction to range from –0.05 µg/m³ to 0.15 µg/m³.¹⁰⁵ The State also provides an emissions trend chart that shows SO_x emissions to be steady at approximately 8 tpd from 2013 through 2024. Given that the relative levels of estimated SO_x and ammonia emissions over that timeframe remain similar, the State concludes that the 2013 sensitivities are also representative of future years.¹⁰⁶ The State also provides the ambient PM_{2.5} responses in 2013, 2020, and 2024 to 30% and 70% reductions in SO_x emissions, all of which are below the 0.2 µg/m³ contribution threshold.¹⁰⁷

¹⁰⁴ 2018 PM_{2.5} Plan, App. G, tables 5 and 7, 11–12. The response to 2025 ammonia reductions would be lower than the values stated in the text, due to the effect of declining NO_x emissions.

¹⁰⁵ *Id.* at App. G, 15–16, tables 8 and 9.

¹⁰⁶ 2018 PM_{2.5} Plan, App. G, 15. The State includes modeling of 30% and 70% reductions of SO_x only for 2013, finding that the sensitivity of ambient PM_{2.5} to such changes were below the EPA's recommended threshold, and that the 2020 and 2024 results would differ little from 2013 due to the similarity of emissions conditions over time. App. G, 17. CARB's September 2019 Precursor Clarification provides the 2020 and 2024 sensitivity results, which are indeed very close to those for 2013.

¹⁰⁷ CARB's September 2019 Precursor Clarification.

We note that the 2018 PM_{2.5} Plan's sensitivity estimates for 2013 are well below that threshold for both the 30% and 70% emission reduction scenarios and even negative for certain monitoring sites. Given those results and the steady SO_x emission levels over 2013 to 2025 (as opposed to increases), the EPA agrees with the State's conclusion that the 2013 modeled sensitivities provide a sufficient basis for the SO_x precursor demonstration. The supplemental results provided by the State for 2020 and 2024 support this conclusion.

Therefore, on the basis of these modeled ambient PM_{2.5} responses to SO_x emission reductions in the SJV, 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 2012 annual PM_{2.5} NAAQS in the SJV.

(c) VOC Precursor Demonstration

In the 2018 PM_{2.5} Plan, the State found that the ambient PM_{2.5} response to VOC emission reductions were generally below the EPA's recommended contribution threshold of 0.2 µg/m³, and predicted an increase in ambient PM_{2.5} levels in response to VOC reductions (*i.e.*, a disbenefit) at 2 out of 15 monitoring sites in 2020, and 11 out of 15 sites in 2024. Only for a 70% emission reduction for the 2013 base year did the State predict the ambient PM_{2.5} response to be above the threshold at a majority of sites.¹⁰⁸

We note that the 2018 PM_{2.5} Plan's sensitivity estimates for 2020 and 2024 are well below that threshold for both the 30% and 70% emission reduction scenarios, and even negative for certain monitoring sites. The State also provides an emissions trend chart that shows VOC emissions are projected to decrease by about 30 tpd, or 9% between 2013 and 2020 as well as between 2013 and 2024, and concludes that 2013 sensitivity results are not representative into the future and that the 2020 and 2024 results are representative.¹⁰⁹ Finally, the State concludes that VOC emissions do not contribute significantly to PM_{2.5} levels that exceed the 2012 annual PM_{2.5} NAAQS.

The EPA has evaluated and agrees with the State's determination in the 2018 PM_{2.5} Plan that the projected 2024 year is more representative of conditions in the SJV for sensitivity-based analyses and that VOC reductions in 2024 would mostly result in a

¹⁰⁸ 2018 PM_{2.5} Plan, App. G, 18–19, tables 10 and 11.

¹⁰⁹ *Id.* at App. G, 19–20.

disbenefit to ambient PM_{2.5} levels, seen at 11 of 15 monitoring sites. The EPA agrees that the 9% VOC emissions decrease from 2013 to 2024 supports reliance on the 2024 modeling results. Furthermore, there is projected to be a large decrease in NO_x emissions over this period, as described in section IV.B.2 of this proposed rule, that 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 reductions are expected to result from baseline measures already in effect. Therefore, we conclude that it is reasonable to rely on future year 2024 modeled responses to VOC reductions. The EPA also concludes that the State provided a reasonable explanation for the VOC reduction disbenefit and evidence that it occurs in the SJV; as discussed in the EPA's PM_{2.5} Precursor TSD, VOC reductions led to less peroxyacetyl nitrate formation, and so to greater availability of nitrate to form particulate ammonium nitrate.¹¹⁰

For 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 2012 annual PM_{2.5} NAAQS in the SJV.

C. Air Quality Modeling

1. Requirements for Air Quality Modeling

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. As noted in sections I and II of this proposed rule, the outermost statutory Serious area attainment date for the 2012 annual PM_{2.5} NAAQS in the SJV is December 31, 2025.

The PM_{2.5} SIP Requirements Rule explains that Serious area plans under CAA section 189(b) must include a demonstration (including air quality modeling) that the control strategy provides for attainment of the PM_{2.5} NAAQS as expeditiously as practicable.¹¹¹ For purposes of determining the attainment date that is as expeditious as practicable, the state must conduct future year modeling that takes into account emissions growth, known controls (including any controls that were previously determined to be RACM/RACT or BACM/BACT), and any other emissions controls that are needed

for expeditious attainment of the NAAQS.

The EPA's PM_{2.5} modeling guidance¹¹² ("Modeling Guidance" and "Modeling Guidance Update") recommends that states use a photochemical model, such as the CMAQ model, to simulate a base case, with meteorological and emissions inputs reflecting a base case year to replicate concentrations monitored in that year. The Modeling Guidance recommends the following procedures for states to use in attainment demonstrations. The model should undergo a performance evaluation to ensure that it satisfactorily reproduces the concentrations monitored in the base case year. The model may then be used 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 future year.¹¹³ The Modeling Guidance recommends that the modeled response to the emission changes between the base and future years be used to calculate relative response factors (RRFs). The modeled RRFs are then applied to the monitored design value in the base year to estimate the projected design value in the future year, which can be compared against the NAAQS. In the recommended procedure, the RRFs are calculated 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. Because each species is handled separately, before applying an RRF, the base year PM_{2.5} design value must first be split into its species components, using available chemical species measurements. The Modeling

¹¹² Memorandum dated November 29, 2018, from Richard Wayland, Air Quality Assessment Division, OAQPS, EPA, to Regional Air Division Directors, EPA, Subject: "Modeling Guidance for Demonstrating Air Quality Goals for Ozone, PM_{2.5}, and Regional Haze," ("Modeling Guidance"), and Memorandum dated June 28, 2011, from Tyler Fox, Air Quality Modeling Group, OAQPS, EPA, to Regional Air Program Managers, EPA, Subject: "Update to the 24 Hour PM_{2.5} NAAQS Modeled Attainment Test," ("Modeling Guidance Update").

¹¹³ In this section, we use the terms "base case," "base year" or "baseline," and "future year" as described in section 2.3 of the EPA's Modeling Guidance. The "base case" modeling simulates measured concentrations for a given time period, using emissions and meteorology for that same year. The modeling "base year" (which can be the same as the base case year) is the emissions starting point for the plan and for projections to the future year, both of which are modeled for the attainment demonstration. Modeling Guidance, 37–38. Note that CARB sometimes uses "base year" synonymously with "base case" and "reference year" instead of "base year."

Guidance provides additional detail on the recommended approach.¹¹⁴

2. Summary of State's Submission

The 2018 PM_{2.5} Plan includes a modeled demonstration projecting that the SJV will attain the 2012 annual PM_{2.5} NAAQS by December 31, 2025. 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 7.4 ("Attainment Demonstration and Modeling") of the 2018 PM_{2.5} Plan. The State provides a conceptual model of PM_{2.5} formation in the SJV 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 2018 Staff Report, which includes ambient trends and other data in support of the demonstration of attainment by 2025.

3. EPA Evaluation and Conclusion

CARB's air quality modeling approach investigated the many interconnected facets of modeling ambient PM_{2.5} in the SJV, 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, and adjustments to baseline air quality for modeling. These analyses are generally consistent with the EPA's recommendations in the Modeling Guidance.

The model performance evaluation in section 5.2 ("CMAQ Model Evaluation") of Appendix K of the 2018 PM_{2.5} Plan included statistical and graphical measures of model performance.

The EPA's evaluation of the modeling for the 2012 annual PM_{2.5} NAAQS incorporates the evaluation that the EPA previously did for other NAAQS in the

¹¹⁴ Modeling Guidance, section 4.4, "What is the Modeled Attainment Tests for the Annual Average PM_{2.5} NAAQS."

¹¹⁰ EPA's PM_{2.5} Precursor TSD, 22.

¹¹¹ 40 CFR 51.1011(b)(1); 81 FR 58010, 58087.

2018 PM_{2.5} Plan. The EPA previously evaluated and approved the modeling conducted for the 2006 24-hour PM_{2.5} NAAQS as part of the 2018 PM_{2.5} Plan; see 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 2006 NAAQS Modeling TSD") accompanying that action for details.¹¹⁵ The conclusions in the EPA's 2006 NAAQS Modeling TSD focused on the 2006 24-hour PM_{2.5} NAAQS; in this notice we extend the evaluation with information specific to the 2012 annual PM_{2.5} NAAQS.

Most aspects of the 2018 PM_{2.5} Plan modeling and the EPA's evaluation of it are the same for the 24-hour and the annual averaging times, and the EPA has found them adequate. These include the modeling protocol, choice of model, meteorological modeling, modeling emissions inventory, choice of model, modeling domain, and procedures for model performance evaluation. One aspect that differs between the 24-hour and annual averaging times is the specific calculation procedure for estimating a future design value. In the procedure recommended in the Modeling Guidance for both averaging times, the model is used to calculate RRFs, the ratio of modeled future concentrations to base year concentrations, and the RRF is applied to monitored base year concentrations; this is done for each monitor, PM_{2.5} species, and calendar quarter. But for the 24-hour averaging time, the recommended procedure uses the highest individual concentration days in each quarter, whereas for the annual average, it uses the average of all days in each quarter. For the current action on the 2018 PM_{2.5} Plan, the EPA considers that the State procedures¹¹⁶ for estimating future design values for the 2012 annual PM_{2.5} NAAQS generally followed the EPA's recommendations and are adequate.

Another modeling aspect that can differ between 24-hour and annual average is the focus of the model performance evaluation on the respective averaging times. For the 24-hour average, it is especially important that modeled concentrations on the highest days are comparable to those on the highest monitored days because calculation of the design value for the 24-hour PM_{2.5} NAAQS uses the 98th percentile concentrations. For the annual average, peak concentrations

continue to be important, but lower concentration days are also important because all days are included in the average. Under- and over-predictions on non-peak days may average out and have little overall effect on the modeled annual concentration, but systematic underprediction on non-peak days could lead to model underprediction of the annual average concentration. This problem of model bias is mitigated by the use of the model in a relative sense as recommended in the Modeling Guidance. In the RRF, model bias "cancels out" to a degree since it would be present in both its numerator (future year) and its denominator (base year). Applying the RRF to monitored base year concentration in this way anchors the final model prediction to real-world concentrations. Further, the Modeling Guidance recommends that RRFs be calculated on a quarterly basis, to better account for emissions sources and atmospheric chemistry that differ between the seasons.

The 2018 PM_{2.5} Plan did not include a separate model performance evaluation for the 24-hour and annual PM_{2.5} averaging times; the State used statistical and graphical analyses applicable to both. The EPA evaluated the modeling for the 2012 annual PM_{2.5} NAAQS using that same information, much of which has already been discussed in the EPA's 2006 NAAQS Modeling TSD. For the most part, in the EPA's 2006 NAAQS Modeling TSD, the EPA did not distinguish between the two averaging times either, but drew conclusions for the 24-hour averaging time rather than the annual averaging time. That TSD did note a relatively large negative normalized bias (underprediction) in the ammonium and nitrate performance statistics¹¹⁷ for the 2nd quarter for monitoring sites in Bakersfield, Fresno, and Visalia; and we add here that the 3rd quarter has similar negative bias. Underprediction of total PM_{2.5} in the 2nd and 3rd quarters is also evident in time series plots for most monitoring sites, though by only a small amount for several monitoring sites.¹¹⁸ The RRF procedure removes much of this bias, so the underprediction in the model performance evaluation does not translate into an underpredicted 2025 design value. The EPA's 2006 NAAQS Modeling TSD noted that because those quarters have projected concentrations that are less than half of those in the 1st and 4th, this may have a small influence on annual average concentrations. It has still less influence on the 24-hour

average, because peak 24-hour concentrations typically occur in winter, *i.e.*, in the 1st and 4th quarters. For example, the worst quarterly underprediction for nitrate was a for quarter 3, and occurred when quarterly total PM_{2.5} concentration was 9.4 µg/m³. By contrast, for quarter 1 nitrate had a small overprediction, and occurred when quarterly total PM_{2.5} concentration was 21.1 µg/m³. That is, nitrate predictions have more bias during the quarters with low PM_{2.5} concentrations. This is apparent from the Plan's "bugle" plot for the four monitors with speciated data.¹¹⁹ Large (negative) values of bias in nitrate predictions occur for the lowest quarterly nitrate concentrations. For the higher concentrations that most affect the annual average, nitrate fractional bias has a mixture of positive and negative values. For total PM_{2.5}, fractional bias has a similar seasonal pattern to that of nitrate, with underprediction during quarter 2 and quarter 3 when quarterly PM_{2.5} concentration values are in the 5–10 µg/m³ range, and small bias when quarterly concentrations are in the 20–30 µg/m³ range. For the overall annual average, performance is good relative to that seen in other modeling studies with lower values of bias and error for multiple performance statistics for nitrate, as well as for the other PM_{2.5} species and total PM_{2.5}.¹²⁰

The high PM_{2.5} concentration days are generally captured by the model, even though some are underpredicted in December at certain monitoring sites such as Fresno. Overall, the modeled site maxima are comparable to the measurements. Also, the frequency of high and low days generally matches observations so the annual as well as the daily model performance is acceptable.

The EPA evaluated, in our rulemaking with respect to the 2006 24-hour PM_{2.5} NAAQS in the SJV, the State's choice of model and the extensive discussion in the 2018 PM_{2.5} Plan about modeling procedures, tests, and performance analyses.¹²¹ We consider the State's analyses consistent with the EPA's guidance on modeling for PM_{2.5} attainment planning purposes. Based on these reviews, we propose to find that the modeling in the 2018 PM_{2.5} Plan is adequate for the purposes of supporting

¹¹⁵ The model performance is discussed further in section J ("Air Quality Model Performance") of the EPA's 2006 NAAQS Modeling TSD.

¹¹⁶ 2018 PM_{2.5} Plan, App. K, 18.

¹¹⁷ Id. at App. K, 48ff, tables 20 through 23.

¹¹⁸ Id. at App. K, 131ff, Supplemental materials, Figures S.41–S.52.

¹¹⁹ Id. at App. K, 53, Figure 13.

¹²⁰ Id. at App. K, 54, Figure 14.

¹²¹ For a more detailed summary of the State's air quality modeling in the 2018 PM_{2.5} Plan with respect to the 2006 24-hour PM_{2.5} NAAQS, rather than the 2012 annual PM_{2.5} NAAQS, please refer to the EPA's 2006 NAAQS Modeling TSD.

the State's RFP demonstration and the attainment demonstration.

D. Best Available Control 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)."¹²²

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.¹²³ 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.¹²⁴ 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

¹²² 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.

¹²³ 81 FR 58010, 58081 and General Preamble Addendum, 42011, 42013.

¹²⁴ Id. and General Preamble Addendum, 42009–42010.

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.¹²⁵

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 pollutant reduced by a measure or technology) associated with the measure or control.¹²⁶

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.

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 SJV 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 proposed rule concerning precursors, the State's analysis indicates that the Plan should control emissions of PM_{2.5} and NO_x in order to reach attainment.

¹²⁵ 81 FR 58010, 58083–58085.

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

Accordingly, the State evaluated potential controls for those pollutants in the analysis of what is necessary to meet the BACM (including BACT) requirements.

For stationary and area sources, the District identifies the sources of direct PM_{2.5} and NO_x in the SJV that are subject to District emission control measures and provides its evaluation of these regulations for compliance with BACM requirements in Appendix C of the 2018 PM_{2.5} Plan. As part of its process for identifying candidate BACM 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.¹²⁷ Based on these analyses, the District concludes that all best available control measures for stationary and area sources are in place in the SJV for NO_x and directly emitted PM_{2.5} for purposes of meeting the BACM/BACT requirement for the 2012 annual PM_{2.5} NAAQS.

For mobile sources, CARB identifies the sources of direct PM_{2.5} and NO_x in the SJV that are subject to the State's emission control measures and provides its evaluation of these regulations for compliance with BACM requirements in Appendix D of the 2018 PM_{2.5} Plan. Appendix D describes CARB's process for determining BACM, including identification of the sources of direct PM_{2.5} and NO_x in the SJV, 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.¹²⁸ 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 SJV.¹²⁹ Based on these analyses, CARB concludes that all best available control measures for mobile sources are in place in the SJV for NO_x and directly emitted PM_{2.5} for purposes of meeting the BACM/BACT requirement for the 2012 annual PM_{2.5} NAAQS.

¹²⁷ 2018 PM_{2.5} Plan, Ch. 4, section 4.3.1.

¹²⁸ Id. at App. D, Ch. II.

¹²⁹ Id. at App. D, D–127 and D–128.

3. EPA Evaluation and Proposed Action

The first step in determining BACM 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 proposes 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.¹³⁰

We provide an evaluation of many of the District's control measures for stationary sources and area sources in section III of the EPA's "Technical Support Document, EPA Evaluation, San Joaquin Valley Serious Area Plan for the 2012 Annual PM_{2.5} NAAQS," December 2021 ("EPA's 2012 Annual PM_{2.5} TSD").

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 SJV PM_{2.5} Plan's BACM 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 1985.¹³¹

Appendix D of the 2018 PM_{2.5} Plan describes the current efforts of the eight local jurisdiction MPOs to implement cost-effective TCMs in the SJV.¹³² TCMs are projects that reduce air pollutants from transportation sources by reducing vehicle use, traffic congestion, or vehicle miles traveled. The eight MPOs in the SJV currently implement TCMs 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% 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.¹³³ 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 SJV.¹³⁴

We have reviewed the State's and District's analysis and determination in the SJV PM_{2.5} Plan that their baseline mobile, stationary, and area source control measures meet the requirements for BACM for sources of direct PM_{2.5} and applicable PM_{2.5} plan precursors (*i.e.*, NO_x) for purposes of the 2012 annual PM_{2.5} NAAQS. In our review, we considered our evaluation of the State's and District's rules in connection with our approval of the demonstrations for BACM (including BACT) and MSM for the 2006 24-hour PM_{2.5} NAAQS.¹³⁵ We conclude that the evaluation processes followed by CARB and the District in the SJV PM_{2.5} Plan to identify potential BACM 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 the eight MPOs are implementing all reasonable TCMs in the SJV and propose to find that these

TCMs implement BACM 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 in accordance with the requirements of CAA section 189(b)(1)(B), and in satisfaction of the Serious area plan requirements for the 2012 annual PM_{2.5} NAAQS.

E. Nonattainment New Source Review Requirements Under CAA Section 189(e)

Section 189(e) of the CAA 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.¹³⁶ 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). The publication of our final action to reclassify the SJV area as Serious nonattainment for the 2012 annual PM_{2.5} NAAQS established a deadline of June 27, 2023, 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 2012 annual PM_{2.5} NAAQS.¹³⁷

California submitted nonattainment NSR SIP revisions to address the subpart 4 requirements for the Serious area attainment plan for SJV on November 20, 2019.¹³⁸ We will act on that submission through a separate rulemaking, as appropriate.

F. Attainment Demonstration

1. Requirements for Attainment Demonstration

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 relevant PM_{2.5} NAAQS by the applicable attainment date. The PM_{2.5} SIP Requirements Rule explains that Serious area attainment plans under CAA sections 189(b) must include a demonstration (including air quality modeling) that the control

¹³³ *Id.* at App. D, D-127.

¹³⁴ *Id.* and SJVUAPCD, "2016 Ozone Plan for 2008 8-Hour Ozone Standard" (adopted June 16, 2016), App. D, Attachment D, tables D-10 to D-17.

¹³⁵ 85 FR 44192. The EPA provides a more detailed evaluation of many of the District's control measures for stationary and area sources in two supporting documents: 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; and the EPA's "Response to Comments Document for the EPA's Final Action on the San Joaquin Valley Serious Area Plan for the 2006 PM_{2.5} NAAQS," June 2020.

¹³⁰ 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).

¹³¹ 2018 PM_{2.5} Plan, App. D, Table 17.

¹³² *Id.* at App. D, D-127 and D-128.

¹³⁶ General Preamble, 13539 and 13541-13542.

¹³⁷ 86 FR 67343, 67347.

¹³⁸ Letter dated November 15, 2019, from Richard W. Corey, Executive Officer, CARB, to Michael Stoker, Regional Administrator, EPA Region IX.

strategy provides for attainment of the PM_{2.5} NAAQS as expeditiously as practicable.¹³⁹ For purposes of determining the attainment date that is as expeditious as practicable, the state must conduct future year modeling that takes into account emissions growth, known controls (including any controls determined to be RACM, RACT, and additional reasonable measures, and BACM, BACT, and additional feasible measures), and any other emissions controls that are needed for expeditious attainment of the NAAQS.¹⁴⁰ The regulatory requirements for Serious area plans are codified at 40 CFR 51.1010 (control strategy requirements) and 40

CFR 51.1011(b) (attainment demonstration and modeling requirements).

2. Summary of State's Submission

The SJV PM_{2.5} Plan includes a modeled demonstration projecting attainment of the 2012 annual PM_{2.5} NAAQS in the SJV by December 31, 2025, based on emission reductions from implementation of baseline control measures and the development, adoption, and implementation of additional control measures to meet specific enforceable commitments. We have summarized the State's air quality modeling for demonstrating attainment

in section IV.C.2 of this proposed rule. Table 3 shows the 2013 base year and 2025 projected future year annual PM_{2.5} design values at monitoring sites in the SJV. As recommended by the EPA's guidance, the 2013 base year design value for modeling purposes is a weighted average of three monitored design values (for 2010–2012, 2011–2013, and 2012–2014), to minimize the influence of year-to-year variability. The highest 2025 projected design value is 12.0 µg/m³ at the Bakersfield-Planz and Madera monitoring sites, consistent with demonstrating attainment of the 12.0 µg/m³ level of the 2012 annual PM_{2.5} NAAQS.¹⁴¹

TABLE 3—BASE YEAR AND PROJECTED ATTAINMENT YEAR ANNUAL PM_{2.5} DESIGN VALUES AT MONITORING SITES IN THE SAN JOAQUIN VALLEY

Monitoring site	2013 Base design value (µg/m ³)	2025 Projected design value (µg/m ³)
Bakersfield-Planz	17.2	12.0
Madera	16.9	12.0
Hanford	16.5	10.5
Visalia	16.2	11.5
Clovis	16.1	11.4
Bakersfield-California	16.0	11.0
Fresno-Garland	15.0	10.4
Turlock	14.9	11.1
Fresno-Hamilton & Winery	14.2	10.0
Stockton	13.1	10.6
Merced-S. Coffee	13.1	9.6
Modesto	13.0	9.9
Merced-M Street	11.0	8.6
Manteca	10.1	8.0
Tranquility	7.7	5.5

Source: 2018 PM_{2.5} Plan, Table 7–3.

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}")¹⁴² 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 2025 projected attainment year.

The remainder of the emission reductions are to be achieved by additional measures to meet enforceable commitments, including potential regulatory and incentive-based measures and, as necessary, substitute measures.¹⁴³ In the Valley State SIP

Strategy and the 2018 PM_{2.5} Plan, CARB and the District, respectively, included commitments to take action on specific measures by specific years or to develop substitute measures (referred to as "control measure commitments") and to achieve specified amounts of NO_x and direct PM_{2.5} emission reductions by certain dates (referred to as "aggregate tonnage commitments").¹⁴⁴ We refer to these complementary commitments herein as "aggregate commitments."

¹³⁹ 40 CFR 51.1011(b)(1); 81 FR 58010, 58087–58088.

¹⁴⁰ 40 CFR 51.1010(a); 81 FR 58010, 58089–58090.

¹⁴¹ As discussed in section IV.B.3.a of this proposed rule, the State notes that Madera concentrations are biased high. 2018 PM_{2.5} Plan, App. G, 14.

¹⁴² 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 SJV, 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 2025: 0.5 tpd reductions in SO_x (5.9%), 30.0 tpd reductions in VOC (9.3%), and 4.9 tpd reductions in ammonia (1.5%). 2018 PM_{2.5} Plan, App. B, tables B–3, B–4, and B–5.

¹⁴³ In this proposed rule, the term "substitute measures" means additional control measures that were not identified in CARB and the District's original control measure commitments in adopting

the Valley State SIP Strategy and the 2018 PM_{2.5} Plan, respectively. The "substitute" aspect primarily relates to emission reductions (*i.e.*, providing emission reductions where any adopted measure achieves less emission reductions than originally estimated, and/or providing emission reductions in lieu of any originally planned measure that is not adopted). They are also sometimes referred to as "alternative measures" in the SJV PM_{2.5} Plan and adopting resolutions.

¹⁴⁴ CARB Resolution 18–49 and SJVUAPCD Governing Board Resolution 18–11–16, paragraph 6.

CARB’s control measure commitments include 12 regulatory measures and 3 incentive-based measures with implementation anticipated to start no later than 2024.¹⁴⁵ The District’s control measure commitments include nine regulatory measures and three incentive-based measures with implementation anticipated to start no later than 2024.¹⁴⁶ We provide further detail on CARB and the District’s control measure commitments both in sections IV.F.3.b and IV.F.3.c of this proposed rule and in section IV.A of the EPA’s 2012 Annual PM_{2.5} TSD.

CARB’s aggregate tonnage commitments are “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 and 2025.”¹⁴⁷ 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.”¹⁴⁸

The District’s aggregate tonnage commitments are 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.¹⁴⁹

CARB and the District’s aggregate tonnage commitments sum to 33.88 tpd NO_x and 2.2 tpd direct PM_{2.5} emission reductions. We provide further detail on CARB and the District’s aggregate tonnage commitments in sections IV.F.3.b and IV.F.3.d of this proposed rule and in section IV.B of the EPA’s 2012 Annual PM_{2.5} TSD.

We note that the SJV PM_{2.5} Plan generally relies on annual average emission inventory and control strategy estimates, consistent with the annual average form of the 2012 annual PM_{2.5} NAAQS. Table 4 provides a summary of the 2013 base year emissions and the reductions from baseline measures, additional State measures, and additional District measures that the Plan projects will result in attainment of the 2012 annual PM_{2.5} NAAQS in the SJV by December 31, 2025.¹⁵⁰

TABLE 4—SUMMARY OF THE SJV PM_{2.5} PLAN’S ANNUAL AVERAGE EMISSION REDUCTIONS TO ATTAIN THE 2012 ANNUAL PM_{2.5} NAAQS BY DECEMBER 31, 2025

		NO _x (tpd)	% of 2013 base year NO _x emissions	Direct PM _{2.5} (tpd)	% of 2013- base year PM _{2.5} emissions
A	2013 Base Year Emissions	317.2	62.5
B	Baseline Measure Emission Reductions (2013–2025)	173.5	54.7	4.2	6.7
C	Additional CARB Measures	32	10.1	0.9	1.4
D	Additional District Measures	1.88	0.6	1.3	2.1
E	Total 2013–2025 Emission Reductions (B+C+D)	207.38	65.4	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.

3. EPA Evaluation and Proposed Action

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 section IV.A of this proposed rule, the EPA proposes to approve the emissions inventories on which the State based the SJV PM_{2.5} Plan’s attainment demonstration and related provisions. Furthermore, as discussed in section IV.C of this proposed rule, the EPA has evaluated the State’s choice of model and the

extensive discussion in the Modeling Protocol about modeling procedures, tests, and performance analyses. We consider the analyses consistent with the EPA’s guidance on modeling for PM_{2.5} attainment planning purposes. Based on these reviews, we propose to find that the modeling in the Plan is adequate for the purposes of supporting the RFP demonstration and demonstration of attainment by 2025, and thus propose to approve the air quality modeling. For further detail, see the EPA’s February 2020 Modeling TSD.

Second, we must find that the attainment plan SIP submission provides for expeditious attainment through the timely implementation of the control strategy, including RACM,

BACM, and any other emission controls that are needed for expeditious attainment. In the EPA’s final rule on the SJV Moderate area plan for the 2012 annual PM_{2.5} NAAQS, the EPA approved the State’s demonstration of RACM (including RACT) and additional reasonable measures for all sources of direct PM_{2.5} and NO_x, under CAA section 189(a)(1)(C) and 40 CFR 51.1009 for purposes of the 2012 annual PM_{2.5} NAAQS.¹⁵¹ As discussed in section IV.C of this proposed rule, the EPA now proposes to approve the SJV PM_{2.5} Plan’s demonstration of BACM (including BACT) under CAA section 189(b)(1)(B).

Third, the EPA must find that the emissions reductions that are relied on

¹⁴⁵ Valley State SIP Strategy, Table 7. The schedule of proposed SIP measures in Table 7 includes two additional CARB measures: The second phase of the Advanced Clean Cars Program (“ACC 2”) and the “Cleaner In-Use Agricultural Equipment” measures. However, these measures are not scheduled for implementation until 2026 and 2030, respectively, which is after the January 1, 2025 implementation deadline under 40 CFR 51.1011(b)(5) for control measures necessary for attainment by December 31, 2025. Therefore, we are

not reviewing these measures as part of the control strategy to attain the 2012 annual PM_{2.5} NAAQS in the SJV.

¹⁴⁶ 2018 PM_{2.5} Plan, Ch. 4, tables 4–3 and 4–5.

¹⁴⁷ CARB Resolution 18–49.

¹⁴⁸ 2018 PM_{2.5} Plan, Ch. 4, 4–29.

¹⁴⁹ SJVUAPCD Governing Board Resolution 18–11–16, paragraph 6.

¹⁵⁰ Emission reductions from baseline measures are calculated as the sum of all stationary, area, and

mobile source emission reductions from 2013 to 2025 in App. B of the 2018 PM_{2.5} Plan.

¹⁵¹ Our approval of the State’s demonstration of RACM and additional reasonable measures was informed by the State’s control stringency demonstrations in both the Moderate area plan (2016 PM_{2.5} Plan) and the Serious area plan (2018 PM_{2.5} Plan) for the 2012 annual PM_{2.5} NAAQS in the SJV. 86 FR 49100, 49115–49116.

for attainment in the SIP submission are creditable. As discussed in subsections IV.F.3.a through IV.F.3.e of this proposed rule, the SJV PM_{2.5} Plan relies principally on already adopted and approved rules to achieve the emissions reductions needed to attain the 2012 annual PM_{2.5} NAAQS in the SJV by December 31, 2025. The balance of the reductions that the State has modeled to achieve attainment by this date is currently represented by enforceable commitments that account for 13.8% of the NO_x and 8.0% of the direct PM_{2.5} emissions reductions needed for attainment.

The EPA may accept enforceable commitments in lieu of adopted control measures in attainment demonstrations when the circumstances warrant it and the commitments meet three criteria the EPA has established for this purpose. The EPA is proposing to 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 approve the State's reliance 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 2012 annual PM_{2.5} NAAQS by December 31, 2025, consistent with the requirements of CAA sections 189(b)(1)(A). We present the basis for this proposed determination in subsections IV.F.3.a through IV.F.3.e of this proposal and provide further detail of our evaluation of baseline measures and the additional measures and aggregate commitments in sections II and IV, respectively, of the EPA's 2012 Annual PM_{2.5} TSD. In the following subsections we first address the baseline measures that are in effect in the SJV; we then describe the control measure and aggregate tonnage commitments submitted with the Plan; next, we evaluate progress that the State and District have made since submission of the Plan, on both the control measures and the aggregate tonnage commitments; finally we apply the three-factor test for reliance on enforceable commitments to demonstrate attainment.

(a) Baseline Measures

Baseline measures will provide the majority of emissions reductions needed to attain the 2012 annual PM_{2.5} NAAQS in the SJV, amounting to approximately

83.7% of the total NO_x emission reductions and 65.6% of the total direct PM_{2.5} emission reductions necessary to attain.¹⁵²

In the 2018 PM_{2.5} Plan, the State explains that mobile sources emit over 85% of the NO_x in the SJV 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."¹⁵³

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 multiple mobile source regulations for which waivers or authorizations have been issued as revisions to the California SIP.¹⁵⁴

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.¹⁵⁵

As to stationary sources, in the 2018 PM_{2.5} Plan, the State explains that stringent regulations adopted for prior attainment plans continue to reduce

¹⁵² The EPA calculated these percentages as follows: Annual average baseline NO_x reductions from 2013 to 2025 are 173.5 tpd of 207.38 tpd modeled to result in attainment (83.7%) and annual average baseline direct PM_{2.5} reductions are 4.1 tpd of 6.3 tpd modeled to result in attainment (65.1%). 2018 PM_{2.5} Plan, Ch. 4 and App. B.

¹⁵³ 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).

¹⁵⁴ See, e.g., 81 FR 39424, 82 FR 14447, and 83 FR 23232.

¹⁵⁵ 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).

emissions of NO_x and direct PM_{2.5}.¹⁵⁶ 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.¹⁵⁷ The EPA has approved each of the identified measures into the California SIP,¹⁵⁸ with two exceptions.

First, 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 emission limits.¹⁵⁹ CARB submitted the amended rule to the EPA on November 21, 2018. However, the District amended Rule 4905 once more on October 15, 2020, to further extend the period during which manufacturers of weatherized furnaces may pay emission fees in lieu of meeting the rule's NO_x emission limits.¹⁶⁰ CARB submitted the rule as amended October 15, 2020, to the EPA on December 30, 2020, and simultaneously withdrew the rule as amended June 21, 2018.¹⁶¹ 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, 2016.¹⁶² 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.¹⁶³ Until the District submits the necessary documentation to credit emission reductions achieved by Rule 4905

¹⁵⁶ 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.

¹⁵⁷ *Id.* at Ch. 4, Table 4–1.

¹⁵⁸ 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>.

¹⁵⁹ SJVUAPCD, Final Draft Staff Report, "Proposed Amendments to Rule 4905 (Natural Gas-fired, Fan-type Central Furnaces)," 2.

¹⁶⁰ SJVUAPCD, "Item Number X: Adopt Proposed Amendments to Rule 4905 (Natural Gas-Fired, Fan-Type Furnaces)," October 15, 2020, 3, including Final Draft Staff Report, "Proposed Amendments to Rule 4905 (Natural Gas-Fired, Fan-Type Furnaces)."

¹⁶¹ Letter dated December 28, 2020, from Richard W. Corey, Executive Officer, CARB, to John Busterud, Regional Administrator, EPA Region IX.

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

¹⁶³ EPA Region IX, "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.

toward an attainment control strategy, this rule is not creditable for SIP purposes. The 2018 PM_{2.5} Plan indicates that the District attributed annual average emission reductions of 0.31 tpd NO_x between 2013 and 2025 to Rule 4905.¹⁶⁴ These emission reductions would not materially affect the attainment demonstration in the SJV PM_{2.5} Plan.

Second, 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.¹⁶⁵ Appendix C of the 2018 PM_{2.5} Plan indicates, however, that the emissions inventory for incineration of combustible refuse is 0.00 tpd of NO_x and 0.00 tpd direct PM_{2.5} from 2013 through 2025.¹⁶⁶ Thus, although the District included this rule as a baseline measure, there are no meaningful reductions associated with this rule that would affect the attainment demonstration in the SJV PM_{2.5} Plan.

In sum, although Table 4–1 of the 2018 PM_{2.5} Plan identifies two baseline measures that are not creditable for SIP purposes at this time, we conclude that the total emission reductions attributed to these two measures in the future baseline inventories would not materially affect the attainment demonstration in the Plan.

(b) Additional Measures and Aggregate Commitments

The SJV PM_{2.5} Plan identifies a series of additional CARB and District commitments to achieve emission reductions through additional control measures beyond baseline measures that will contribute to expeditious attainment of the 2012 annual PM_{2.5} NAAQS. As discussed in section IV.F.2 of this proposed rule, for mobile sources, CARB’s commitment identifies a list of 12 State regulatory measures and 3 incentive-based measures that CARB has committed to propose to its Board for consideration by specific years.¹⁶⁷ 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 years.¹⁶⁸ The Plan contains CARB and

the District’s estimates of the emission reductions that would be achieved by each of these additional measures, if adopted.¹⁶⁹

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.”¹⁷⁰ 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.¹⁷¹ 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 and 2025.”¹⁷² 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.”¹⁷³

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].”¹⁷⁴ 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.¹⁷⁵ 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.¹⁷⁶

(c) Progress on Control Measure Commitments

In October 2021, CARB and the District provided the “Progress Report and Technical Submittal for the 2012 PM_{2.5} Standard San Joaquin Valley” (2021 Progress Report) to describe their progress to date in developing and adopting the additional measures identified in their control measure commitments. The 2021 Progress Report provides status updates on the substance of each measure and the timing of board consideration for both adopted and remaining control measure commitments.¹⁷⁷ It also provides a side-by-side comparison of the original emission reduction estimates in the SJV PM_{2.5} Plan for each control measure commitment and updated emission reduction estimates for each based on technical analyses for adopted measures and draft measures and/or

¹⁷⁴ SJVUAPCD Governing Board Resolution 18–11–16, 10–11.

¹⁷⁵ 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”).

¹⁷⁶ SJVUAPCD Governing Board Resolution 18–11–16, 10–11.

¹⁷⁷ “Progress Report and Technical Submittal for the 2012 PM_{2.5} Standard San Joaquin Valley,” October 19, 2021. Transmitted to the EPA by letter dated October 20, 2021, from Richard W. Corey, Executive Officer, CARB, to Deborah Jordan, Acting Regional Administrator, EPA Region IX. See sections of 2021 Progress Report entitled “Progress in Implementing District Measures” and “Progress in Implementing CARB Measures.”

¹⁶⁴ 2018 PM_{2.5} Plan, App. C, C–290.

¹⁶⁵ The EPA does not have any pending SIP submission for Rule 4203.

¹⁶⁶ 2018 PM_{2.5} Plan, App. C, C–46.

¹⁶⁷ CARB Resolution 18–49, Attachment A and Valley State SIP Strategy, Table 7 (“State Measures and Schedule for the San Joaquin Valley”).

¹⁶⁸ SJVUAPCD Governing Board Resolution 18–11–16 and 2018 PM_{2.5} Plan, Table 4–4 (“Proposed Regulatory Measures”) and Table 4–5 (“Proposed Incentive-Based Measures”).

¹⁶⁹ 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”).

¹⁷⁰ CARB Resolution 18–49, 5.

¹⁷¹ 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.

¹⁷² CARB Resolution 18–49, 5.

¹⁷³ Valley State SIP Strategy, 7.

documentation in development for forthcoming regulations.¹⁷⁸

Together, as of December 2021, CARB and the District together have adopted 18 measures of the 27 control measure commitments in the SJV PM_{2.5} Plan and have begun the public process on 5 of the remaining control measure commitments. For CARB's portion, CARB has adopted 10 of the 15 measures in its commitment (including one incentive-based measure) and begun the public process on 3 of its remaining 5 measures. The adopted measures include, for example, the Heavy-Duty Vehicle Inspection and Maintenance Program ("Heavy-Duty I/M"), the California Heavy-Duty Low-NO_x Engine Standard, the Small Off-Road Engines (SORE) regulation, and the Accelerated Turnover of Agricultural Equipment Incentive Projects ("Agricultural Equipment Incentive Measure"). For the District's portion of the control measure commitments, the District has adopted 8 of the 12 measures in its commitment (including one incentive-based measure) and begun the public process on two of the remaining four measures. The adopted measures include, for example, amendments to Rule 4311 ("Flares"), Rule 4702 ("Internal Combustion Engines"), and Rule 4901 ("Woodburning Fireplaces and Wood Burning Heaters") (Hot-spot strategy), and the Residential Wood Burning Devices Incentive Projects measure.

Accordingly, the EPA considers that, although CARB and the District have not met the commitment deadlines for several measures, as discussed further in this proposed rule, they have nonetheless made substantial progress in developing and adopting the regulatory measures listed in their respective control measure commitments. We provide further detail on CARB and the District's control measure commitments in section IV.A of the EPA's 2012 Annual PM_{2.5} TSD (including tables IV-A and IV-B regarding CARB and the District's control measure commitments, respectively).

Regarding the remaining nine measures not yet proposed for board consideration, we note that one measure, Rule 4550 ("Conservation Management Practices"), has an action year of 2022 in the 2018 PM_{2.5} Plan (*i.e.*, it is not yet due for board consideration) and that four regulatory measures and four incentive-based measures are overdue.

The four overdue regulatory measures are: The Zero-Emission Airport Ground Support Equipment measure; the Zero-

Emission Off-Road Forklift Regulation Phase 1 measure; the Low-emission Diesel Fuel Requirement; and Rule 4692 ("Commercial Under-fired Charbroiling (Hot-spot Strategy)"). While they have not proposed these measures to their respective boards, CARB and the District timely began the public process on each of the four measures. CARB anticipates board consideration of the diesel fuel measures in 2022 and the forklift measure as early as 2022 and continues to develop the airport ground support equipment measure. The District adopted the "Commercial Under-fired Charbroiling Emission Reduction Strategy" on December 17, 2020, and continues to evaluate potential amendments to Rule 4692 in the near future.¹⁷⁹

The four overdue incentive-based control measures are for the Accelerated Turnover of Trucks and Buses Incentive Projects, the Accelerated Turnover of Off-road Equipment Incentive Projects, the Agricultural Operation Internal Combustion Engines Incentive Projects, and the Commercial Under-fired Charbroiling Incentive Projects. CARB and the District continue to invest in reducing emissions from these sources, as well as other incentive programs not named among the 27 control measure commitments, such as those for nut harvesting and landscape maintenance equipment.¹⁸⁰ However, while CARB and the District have discussed the proposed programs at certain board hearings,¹⁸¹ the EPA is not aware that CARB or the District have started public process for the four incentive-based control measure commitments as enforceable measures to be submitted for inclusion as control measures in the California SIP.

Notwithstanding being overdue in presenting these incentive-based measures for board consideration, CARB and the District state that they continue

¹⁷⁹ Id. at 8–9, 20–22, and tables 2 and 3.

¹⁸⁰ CARB, "Long-Term Heavy-Duty Investment Strategy, Including Fiscal Year 2020–21 Three-Year Recommendations for Low Carbon Transportation Investments," (App. D to CARB's "Proposed Fiscal Year 2021–22 Funding Plan for Clean Transportation Incentives"), release date October 8, 2021; and SJVUAPCD, "Comprehensive Annual Financial Report, Fiscal Year Ended June 30, 2020," release date December 23, 2020. See also, 2021 Progress Report, 3 and 15.

¹⁸¹ For example, CARB staff discussed the Accelerated Turnover of Trucks and Buses Incentive Measure at its annual 2020 update to the CARB Board. CARB presentation, "Update on the 2018 PM_{2.5} SIP for the San Joaquin Valley," October 22, 2020. District staff discussed and adopted an emission reductions strategy for commercial under-fired charbroiling, including incentives, in December 2020. SJVUAPCD, "Item Number 11: Adopt Proposed Commercial Under-Fired Charbroiling Emission Reduction Strategy," December 17, 2020.

to assess and/or prepare the formal documentation for the emission reductions from such incentive-based measures that could be applied towards the aggregate tonnage commitments.¹⁸² For heavy-duty trucks and off-road equipment, CARB acknowledges that many of the project lives do not span the attainment year¹⁸³ and, thus, while these projects accelerate emission reductions and benefit communities in the SJV, the projects that qualify for SIP credit may be limited for the purposes of the 2012 annual PM_{2.5} NAAQS Serious area attainment demonstration. Overall, the EPA anticipates that emission reductions from such projects that qualify for SIP credit ("SIP-creditable emission reductions") may be smaller than originally anticipated in the SJV PM_{2.5} Plan.

CARB and the District point to certain measures that they anticipate will provide more emission reductions than the original emission reduction estimates (*e.g.*, larger emission reductions from Heavy-Duty I/M due to new 2019 state law requirements and new roadside emissions monitoring) and the addition of the two substitute measures (the Agricultural Burning Phase-out Measure (adopted) and the In-Use Locomotive Measure (anticipated for CARB board consideration in 2022)) as compensating for incentive-based measures that may result in less emission reductions than originally projected.¹⁸⁴ In its annual update to the Board on September 23, 2021, CARB staff explained that, in light of the progress to-date on committed-to regulatory measures and these two substitute measures, fewer incentive-based emission reductions would be needed to demonstrate attainment of the 2012 annual PM_{2.5} NAAQS.¹⁸⁵ We further discuss the role of adopted measures, measures not yet proposed for board consideration (including incentive-based measures), and the substitute measures in the following section of this proposed rule.

¹⁸² 2021 Progress Report, 15 and 24.

¹⁸³ Id. at 24 and 32. Generally, mobile source incentive projects implemented under the Carl Moyer program are under contract only during the "project life" and may not be credited with SIP emission reductions after the project life ends. EPA Region IX "Technical Support Document for EPA's Rulemaking for the California State Implementation Plan California Air Resources Board Resolution 19–26 San Joaquin Valley Agricultural Equipment Incentive Measure," February 2020, 12–13.

¹⁸⁴ 2021 Progress Report, 30–31.

¹⁸⁵ CARB, "Valley PM_{2.5} Implementation Update and SIP Amendment," September 23, 2021, slides 22–25. Slide 25 illustrates a large decrease in the expected funding need from approximately \$5 billion over 2018–2025 to approximately \$1 billion over 2021–2025.

¹⁷⁸ 2021 Progress Report, tables 2 and 3.

(d) Progress on Aggregate Tonnage Commitments

As described in section IV.F.2 of this proposed rule, to attain the 2012 annual PM_{2.5} NAAQS in the SJV, CARB committed to achieve 32 tpd of NO_x and 0.9 tpd of PM_{2.5} emissions reductions, and the District committed to achieve 1.88 tpd of NO_x and 1.3 tpd of PM_{2.5} emissions reductions by 2025. These aggregate tonnage commitments sum to 33.88 tpd NO_x and 2.2 tpd direct PM_{2.5}.

As described in sections IV.F.3.b and IV.F.3.c of this proposed rule, CARB and the District have committed to achieve these reductions via the 27 control measure commitments, or such other substitute measures as may be necessary, to achieve the aggregate tonnage commitments for NO_x and direct PM_{2.5}. Because the State's efforts are ongoing, different control measures are at different stages of rule development, rule adoption, submission to the EPA, and EPA evaluation and rulemaking. For the purpose of our analysis of the State's progress toward achieving its aggregate tonnage commitments, we propose to credit reductions from rules that the EPA has approved into the SIP, or that EPA has proposed for approval into the SIP at the time of this notice. We begin by explaining these measures and summing the total reductions from such measures that can be credited to CARB and the District's aggregate commitments. For many remaining measures, although reductions are not formally SIP credited at this time, CARB and the District have made substantial progress toward achieving SIP approval, or otherwise advanced their analysis of the reductions they are likely to achieve in certain areas since the adoption of the Plan. Much of this progress is summarized in the 2021 Progress Report. After detailing the creditable emission reductions achieved in approved rules and rules proposed for approval, we next address the State's progress on emission reductions from its remaining rule development efforts.

Of the 18 measures adopted to date, as well as the adoption of an important substitute measure (the Agricultural Burning Phase-out Measure), the State has submitted 9 measures as revisions to the California SIP as of November 2021. The EPA has proposed or finalized action on four of these submitted measures, including three with large associated emission reductions of direct PM_{2.5} and/or NO_x in the SJV, as follows.¹⁸⁶

¹⁸⁶ The additional measures submitted as SIP revisions for which the EPA has not proposed action include: The Innovative Clean Transit

First, on July 22, 2020, the EPA published its final approval of the District's 2019 amendment to Rule 4901¹⁸⁷ and concurrently credited this measure with annual average emission reductions of 0.2 tpd direct PM_{2.5} towards the District's PM_{2.5} tonnage commitment for 2024.¹⁸⁸ As described in the EPA's March 27, 2020 proposed rule, this amount of SIP credit corresponded to a 75% compliance rate (referred to as a "rule effectiveness rate"), consistent with the EPA's guidance on wood burning curtailment programs,¹⁸⁹ rather than a higher 100% rule effectiveness rate used in the District's original calculations.¹⁹⁰ In the 2021 Progress Report, the State notes this conclusion in the EPA's July 22, 2020 final rule approving this measure into the SIP and now estimates emission reductions of 0.2 tpd direct PM_{2.5} from this measure.¹⁹¹ Consistent with the EPA's July 22, 2020 final rule, we propose to credit this measure with annual average emission reductions of 0.2 tpd direct PM_{2.5} for 2025 (*i.e.*, to subtract 0.2 tpd from the reductions of direct PM_{2.5} emissions that the District is required to achieve with its PM_{2.5} tonnage commitment).

Second, on March 24, 2020, the EPA published its proposal to approve the Agricultural Equipment Incentive Measure into the California SIP,¹⁹² including projects funded through the Carl Moyer Memorial Air Quality Standards Attainment Program ("Carl Moyer"), Funding Agricultural Replacement Measures for Emission Reductions (FARMER), and Natural Resources Conservation Service (NRCS) programs. The measure includes commitments by CARB to monitor, assess, and report on emission reductions, and to achieve emission reductions of 5.1 tpd NO_x and 0.3 tpd direct PM_{2.5} from the 2025 baseline inventory in the 2018 PM_{2.5} Plan by December 31, 2024.¹⁹³ The EPA finalized a partial approval of this measure on December 16, 2021, wherein the EPA credited 4.83 tpd NO_x and 0.24 tpd direct PM_{2.5} towards CARB's

measure (submitted February 13, 2020); Rules 4311, 4306, and 4320 (submitted March 12, 2021); and Rule 4702 (submitted October 15, 2021).

¹⁸⁷ 85 FR 44206.

¹⁸⁸ 85 FR 44192, 44204.

¹⁸⁹ "Strategies for Reducing Wood Smoke," EPA-456/B-13-01, March 2013, 42.

¹⁹⁰ 85 FR 17382, 17415.

¹⁹¹ 2021 Progress Report, 7 and Table 3.

¹⁹² 85 FR 16588.

¹⁹³ EPA Region IX "Technical Support Document for EPA's Rulemaking for the California State Implementation Plan California Air Resources Board Resolution 19-26 San Joaquin Valley Agricultural Equipment Incentive Measure," February 2020, 4-5, 24-25, and 31.

tonnage commitments for 2024 (for attaining the 2006 24-hour PM_{2.5} NAAQS), and calculated 4.46 tpd NO_x and 0.26 tpd direct PM_{2.5} for 2025 (for attaining the 2012 annual PM_{2.5} NAAQS).¹⁹⁴

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 3% of the additional emission reductions (beyond reductions from baseline measures) 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.¹⁹⁵ 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 a given case.¹⁹⁶

According to the State, the SJV'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."¹⁹⁷ In addition, the State notes that 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 SJV.¹⁹⁸ 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 SJV,

¹⁹⁴ EPA Region IX, "Air Plan Approval; San Joaquin Valley Unified Air Pollution Control District," final rule signed December 16, 2021. The EPA deferred action on the NRCS portion of the Agricultural Equipment Incentive Measure.

¹⁹⁵ EPA, "Guidance on Incorporating Voluntary Mobile Source Emission Reduction Programs in State Implementation Plans (SIPs)," October 24, 1997, 5.

¹⁹⁶ EPA, "Incorporating Emerging and Voluntary Measures 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 Retrofit and Replacement Projects: Quantifying and Using Their Emission Benefits in SIPs and Conformity: Guidance for State and Local Air and Transportation Agencies," March 2018, 12.

¹⁹⁷ 2018 PM_{2.5} Plan, Ch. 2, 2-1.

¹⁹⁸ *Id.* at Ch. 2, 2-4.

including regulatory programs, incentive programs, and rigorous outreach and education efforts.¹⁹⁹

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.²⁰⁰ These attainment plans have resulted in CARB 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, the numerous control measures that both the State and District have adopted and implemented in the San Joaquin Valley to date, the State's and District's successful implementation of the Carl Moyer program over the last two decades, and our experience to date quantifying emission reductions achieved through this program,²⁰¹ we believe it is appropriate to allow the State to rely on the Agricultural Equipment Incentive Measure to achieve 13.2% (4.46 tpd) of the additional NO_x reductions and 11.8% (0.26 tpd) of the additional direct PM_{2.5} reductions necessary for the area to attain the 2012 annual PM_{2.5} NAAQS by the end of 2025.²⁰² Moreover, all Carl Moyer and FARMER projects are subject to detailed contract provisions that CARB may enforce against the grantee at any time during the contract term, a program feature that further supports the State's reliance on the Agricultural Equipment Incentive Measure for emission reductions exceeding the EPA's presumptive limits.²⁰³

For purposes of the EPA's proposed rule on the Serious area plan for the

2012 annual PM_{2.5} NAAQS, we propose to approve 4.46 tpd NO_x and 0.26 tpd direct PM_{2.5} for the Carl Moyer and FARMER portions of this measure towards CARB's tonnage commitments for 2025 (for attaining the 2012 annual PM_{2.5} NAAQS).

Third, CARB adopted the Lower Opacity Limits for Heavy-Duty Vehicles measure as revisions to the Heavy-Duty Vehicle Inspection Program (HDVIP) and Periodic Smoke Inspection Program (PSIP). CARB estimated 1,170 tons of PM emissions benefits from the heavy-duty trucking transportation sector from 2019 to 2025.²⁰⁴ CARB also estimates that this measure will achieve 0.02 tpd direct PM_{2.5} reductions by January 1, 2025.²⁰⁵ However, CARB has not yet provided its analysis of the basis for this emission reduction estimate. Therefore the EPA is not proposing at this time to credit this measure with any particular amount of emission reductions towards attainment of the 2012 annual PM_{2.5} NAAQS in the SJV.

Fourth, the Agricultural Burning Phase-out Measure is a significant substitute measure that was not part of the State's original control measure commitments. The Agricultural Burning Phase-out Measure, for purposes of state law, was adopted by the District on June 17, 2021,²⁰⁶ and concurred upon by CARB on June 18, 2021,²⁰⁷ and later adopted by the District on November 18, 2021, as a revision to the California SIP.²⁰⁸ Previously, through Rule 4103 ("Open Burning"), as amended April 15, 2010, the District restricted the type of materials that may be burned and established other conditions and procedures for open burning in conjunction with the District's Smoke Management Program.²⁰⁹ The EPA approved Rule 4103 and the associated table of the restrictions on open burning by crop category into the California SIP

on January 4, 2012.²¹⁰ The District identifies Rule 4103 as a baseline measure in the 2018 PM_{2.5} Plan.²¹¹ The Agricultural Burning Phase-out Measure, in turn, includes a schedule to phase-out (*i.e.*, introduce prohibitions of) agricultural burning for additional crop categories or materials accounting for a vast majority of the tonnage of agricultural waste in phases starting January 1, 2022, and becoming fully implemented by January 1, 2025.²¹² The District estimates that this measure will achieve emission reductions of 1.04 tpd NO_x and 1.54 tpd direct PM_{2.5} in 2025.²¹³

The EPA has evaluated this measure and has proposed to approve the measure into the California SIP.²¹⁴ The EPA considers the Agricultural Burning Phase-out Measure to be an important new measure given the phase-out structure of the measure for most remaining crop categories and the large scale of agricultural activities that produce such agricultural waste and burning thereof in the SJV. While the District assumed a 100% rule effectiveness rate, the EPA noted our general guideline of 80% rule effectiveness and that, notwithstanding the statements in the 2021 Progress Report regarding the permitting requirements for farming operations to burn their waste and the enforceability of the measure, the District did not apply a rule effectiveness rate nor address all the factors that are relevant to determining such a rate.²¹⁵ Therefore, the EPA proposes that an 80% rule effectiveness is reasonable for this measure.

For purposes of reviewing the Serious area plan for the 2012 annual PM_{2.5} NAAQS, the EPA has reviewed the District's method for calculating the emission reductions that this measure will achieve by January 1, 2025.

²¹⁰ 77 FR 214 (January 4, 2012). The table of open burning restrictions by crop category is codified at 40 CFR 52.220(c)(388)(i)(B)(3) Table 9-1, Revised Proposed Staff Report and Recommendations on Agricultural Burning, approved by the District on May 20, 2010.

²¹¹ 2018 PM_{2.5} Plan, Chapter 4, tables 4-2 and 4-3, and App. C.

²¹² 2021 Supplemental Report and Recommendations, Table 2-1 ("Accelerated Reductions by Crop Category").

²¹³ SJVUAPCD, "District 4103 (Open Burning) Technical Submittal for Receiving SIP Credit for Reductions in Agricultural Burning," October 18, 2021, Table 6. See also, Progress Report, Table 3.

²¹⁴ EPA Region IX, "Air Plan Approval; California; San Joaquin Valley Unified Air Pollution Control District; Open Burning," proposed rule signed December 16, 2021.

²¹⁵ EPA Region IX, "Technical Support Document for EPA's Rulemaking for the California State Implementation Plan, San Joaquin Valley Unified Air Pollution Control District's Agricultural Burning Phase-Out Measure," December 2021.

¹⁹⁹ Id. at Ch. 2, 2-2.

²⁰⁰ See, *e.g.*, 69 FR 30005 (May 26, 2004) (approving plan to attain the 1987 PM₁₀ 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).

²⁰¹ The EPA has approved two prior incentive-based SIP submissions from CARB that rely on Carl Moyer projects for SIP emission reduction credit. See 86 FR 3820 (January 15, 2021) (full approval of South Coast incentive measure) and 81 FR 53300 (August 12, 2016) (limited approval/disapproval of "Emission Reduction Report" for San Joaquin Valley).

²⁰² The EPA calculated these percentages based on the additional emission reductions necessary to attain beyond the baseline inventory for 2025: 4.46 tpd NO_x/33.88 tpd NO_x = 13.2%; and 0.26 tpd direct PM_{2.5}/2.2 tpd direct PM_{2.5} = 11.8%.

²⁰³ 2011 Carl Moyer Guidelines, Part I, Chapter 3, Section Y ("Minimum Contract Requirements") and 2017 Carl Moyer Guidelines, Volume I, Part 1, Chapter 3, Section V ("Minimum Contract Requirements"), para. 11 ("Repercussions for Nonperformance").

²⁰⁴ CARB, "Proposed Amendments to the Heavy-Duty Vehicle Inspection Program and Periodic Smoke Inspection Program, Staff Report: Initial Statement of Reasons," release date April 3, 2018, 15. See also, EPA Region IX, "Technical Support Document for EPA's Rulemaking for the California State Implementation Plan, California Air Resources Board—Title 13, Division 3, Chapter 3.5; Opacity Testing of Heavy-Duty Diesel Vehicles," July 2021, 4.

²⁰⁵ 2021 Progress Report, 16 and Table 2.

²⁰⁶ SJVUAPCD Resolution 21-06-12, June 17, 2021.

²⁰⁷ Letter dated June 18, 2021, from Richard W. Corey, Executive Officer, CARB, to Samir Sheikh, Executive Director, SJVUAPCD.

²⁰⁸ SJVUAPCD Resolution 21-11-7, November 18, 2021. See also, Letter dated October 20, 2021, from Richard W. Corey, Executive Officer, CARB, to Deborah Jordan, Acting Regional Administrator, EPA Region IX.

²⁰⁹ SJVUAPCD Rule 4103, as amended April 15, 2010.

Specifically, the District calculated the annual average emissions of agricultural burning following full implementation of the phase-out (*i.e.*, by January 1, 2025), considering the tonnages of waste and emission factors of each crop category (0.51 tpd NO_x and 0.67 tpd direct PM_{2.5}).²¹⁶ The District then subtracted these values (*i.e.*, the additional reductions from the revised measure) from the annual average emissions in the baseline emissions inventory of the 2018 PM_{2.5} Plan for the 2025 attainment year (1.55 tpd NO_x and 2.21 tpd direct PM_{2.5}).²¹⁷ The resulting difference represents the annual average emission reductions to be achieved by the measure (1.04 tpd NO_x and 1.54 tpd direct PM_{2.5}).²¹⁸

The EPA proposes that this is an appropriate calculation method to estimate the emission reductions from the Agricultural Burning Phase-out Measure. It builds upon the baseline measure in the Plan for this source category (*i.e.*, Rule 4103, amended April 15, 2010, and Table 9–1, adopted May 20, 2010), applies appropriate emission

factors, and identifies the difference between the Plan’s baseline emissions and the emissions that would remain following full implementation of the measure. The January 1, 2025 deadline for final implementation is also consistent with the implementation deadline under 40 CFR 51.1011(b)(5) for control measures necessary for attainment by December 31, 2025. However, the EPA proposes to apply an 80% rule effectiveness rate, rather than the 100% rule effectiveness rate used in the District’s calculation.²¹⁹ After applying this effectiveness rate, the EPA proposes to credit this measure with emissions reductions of 0.83 tpd NO_x and 1.23 tpd direct PM_{2.5} in 2025 (*i.e.*, subtract these values from the District’s tonnage commitments for 2025). We provide further detail on this measure in sections III.B.1.a and IV.B.3.e of the EPA’s 2012 Annual PM_{2.5} TSD.

The EPA anticipates finalizing action on the proposed rule on the Agricultural Burning Phase-out Measure prior to or concurrent with final action on the Serious area plan for the 2012 annual

PM_{2.5} NAAQS for the SJV. Accordingly, Table 5 of this proposed rule summarizes the total NO_x and direct PM_{2.5} emission reductions necessary to attain the 2012 annual PM_{2.5} NAAQS in the SJV by December 31, 2025, the emission reductions attributed to baseline measures and new control strategy measures (including only measures approved or proposed for approval into the California SIP), and the emission reductions remaining as aggregate tonnage commitments. We estimate that 13.8% of the NO_x reductions necessary for attainment and 8.0% of the direct PM_{2.5} reductions necessary for attainment remain as aggregate tonnage commitments. This remaining commitment is split between CARB and the District, as described further in this proposed rule. Notably, however, if the approval of the Agricultural Burning Phase-out Measure is finalized as proposed, the District will have met its direct PM_{2.5} emission reduction commitment of 1.3 tpd and, in fact, exceeded it by 0.13 tpd.²²⁰

TABLE 5—REDUCTIONS NEEDED FOR ATTAINMENT IN 2025 AND AGGREGATE TONNAGE COMMITMENTS

		NO _x (tpd)	Direct PM _{2.5} (tpd)
A	Total reductions needed from baseline and control strategy measures	207.38	6.4
B	Reductions from baseline measures	173.5	4.2
C	Reductions from additional measures <i>approved</i> into the California SIP	4.46	0.46
D	Reductions from additional measures <i>proposed for approval</i> into the California SIP	0.83	1.23
E	Total reductions remaining as commitments (A – B – C – D)	28.59	0.51
F	Percent of total reductions needed remaining as commitments (E/A)	13.8%	8.0%

Sources: 2018 PM_{2.5} Plan, Ch. 4, tables 4–3 and 4–7, and Appendix B, tables B–1 and B–2; EPA final rule signed December 16, 2021 (partial approval of the Agricultural Equipment Incentive Measure); and EPA proposed rule signed December 16, 2021 (proposing to approve the Agricultural Burning Phase-out Measure) and EPA Region IX, “Technical Support Document for EPA’s Rulemaking for the California State Implementation Plan, San Joaquin Valley Unified Air Pollution Control District’s Agricultural Burning Phase-Out Measure,” December 2021.

Beyond the three measures that the EPA proposes to credit towards the aggregate tonnage commitments, CARB and the District have made substantial progress in developing and adopting additional measures, as described in the 2021 Progress Report. CARB has provided updated emission reduction estimates for 10 additional measures, including 9 that have been adopted, as well as one substitute measure in development. The CARB measure with the largest updated emission reduction estimates is Heavy-Duty I/M. In the Valley State SIP Strategy, CARB

originally estimated that Heavy-Duty I/M would achieve 6.8 tpd NO_x and <0.1 tpd direct PM_{2.5} in 2025 and described the regulatory concepts that would reflect the current (as of 2018) “advanced engine and exhaust control technologies, including on-board diagnostics (OBD).”²²¹ Since that time, as described in the 2021 Progress Report, California has developed additional provisions related to Heavy-Duty I/M that would achieve additional emission reductions.²²²

In particular, CARB states that California Senate Bill 210, signed into law in 2019, enhances the regulatory authority of this program by requiring that on-road heavy-duty vehicles comply with Heavy-Duty I/M in order to register annually with the California Department of Motor Vehicles. CARB also states that the periodic testing component of the program would be complemented by “a new component, roadside emissions monitoring (remote sensing devices and/or CARB’s Portable Emissions Acquisition System, known as PEAQS) to detect high emitting

²¹⁶ Agricultural Burning Phase-out Measure, Table 6.

²¹⁷ *Id.* at Table 4. See also, 2018 PM_{2.5} Plan, C–15 (“Emissions Inventory” table for open burning).

²¹⁸ Agricultural Burning Phase-out Measure, Table 6.

²¹⁹ EPA Region IX, “Technical Support Document for EPA’s Rulemaking for the California State Implementation Plan, San Joaquin Valley Unified

Air Pollution Control District’s Agricultural Burning Phase-Out Measure,” December 2021.

²²⁰ The direct PM_{2.5} emission reduction from Rule 4901 (0.2 tpd) and the Agricultural Burning Phase-out Measure (1.23 tpd) sum to 1.43 tpd, which exceeds the 1.3 tpd direct PM_{2.5} commitment by 0.13 tpd.

²²¹ Valley State SIP Strategy, 19–20 and Table 8.

²²² 2021 Progress Report, 19. CARB notes that further detail on emission reduction calculations

can be found in the CARB staff report on Heavy-Duty I/M, released October 15, 2021. See, CARB, “Staff Report: Initial Statement of Reasons, Public Hearing to Consider the Proposed Heavy-Duty Inspection and Maintenance Regulation,” October 8, 2021, (“Heavy-Duty I/M ISOR”) and App. H (“Proposed Heavy-Duty Inspection and Maintenance Regulation, Standardized Regulatory Impact Assessment”).

vehicles between periodic test cycles and require additional testing and repair to ensure emissions control components are operating properly.”²²³ CARB estimates that Heavy-Duty I/M, as further developed since the Valley State SIP Strategy, will achieve 14.7 tpd NO_x and 0.03 tpd direct PM_{2.5} in 2025 (*i.e.*, roughly half the remaining aggregate commitment for NO_x).

The EPA is not proposing to credit that amount of emission reductions towards the aggregate tonnage commitments at this time. The EPA would only take such action after Heavy-Duty I/M is approved by the California Office of Administrative Law, and the State submits the measure as a revision to the California SIP. Notwithstanding the fact that the EPA is not proposing to credit this program at this time, the EPA notes that CARB has developed this first-of-its-kind measure for on-road heavy-duty vehicles, documented its extensive regulatory and technical analyses in the measure’s Initial Statement of Reasons and associated appendices,²²⁴ and explained how the provisions of the program have been expanded relative to those originally conceived as of 2018.

CARB has also been developing a substitute In-Use Locomotive Measure and plans to present the measure for board consideration in 2022.²²⁵ The regulatory concepts in development for this measure include a “Spending Account, Useful Life Limit, a 30-minute idling limit as well as reporting and recordkeeping requirements.”²²⁶ CARB estimates that this measure will achieve reductions of 1.14 tpd NO_x and 0.03 tpd direct PM_{2.5} in 2025.²²⁷ The EPA is aware of CARB’s development of an In-Use Locomotive Measure and is not proposing to credit any amount of emission reductions towards the aggregate tonnage commitments.

The District has similarly provided updated emission reduction estimates for eight additional measures, including seven that have been adopted. The District measures with the largest updated emission reduction estimates

include amendments to Rule 4702 (“Internal Combustion Engines”) (0.61 tpd NO_x), the Residential Wood Burning Devices Incentive Projects measure (0.33 tpd direct PM_{2.5}), and Rule 4354 (“Glass Melting Furnaces”) (0.5 tpd NO_x and 0.04 tpd direct PM_{2.5}), as well as amendments planned in 2022 to Rule 4550 (“Conservation Management Practices”) (0.32 tpd direct PM_{2.5}).

At this time, the EPA is not proposing to credit towards the aggregate tonnage commitments the updated emission reduction estimates from these additional CARB and District measures (beyond those we propose to credit elsewhere in this proposed rule). The EPA will review and take action on the CARB and District measures submitted to date (Innovative Clean Transit, Rule 4311, Rule 4306, Rule 4320, and Rule 4702), as well as measure submissions in the future, in separate rulemakings, during which time the public will have an opportunity to review and provide comment. Although we are not proposing to credit reductions from these measures at this time, we have evaluated the updated emission reduction estimates to assess whether NO_x and/or direct PM_{2.5} emission reduction commitments would be met or, conversely, how much emission reductions would remain of CARB and the District’s aggregate tonnage commitments.

Specifically, of the 12 additional measures for which CARB has provided updated emission reduction estimates, the emission reductions sum to 20.89 tpd NO_x and 0.61 tpd direct PM_{2.5}.²²⁸ Similarly, of the eight additional measures for which the District has provided updated emission reduction estimates, the emission reductions sum to 1.69 tpd NO_x and 0.76 tpd direct PM_{2.5}.²²⁹

²²⁸ The EPA calculated these amounts by summing the updated emission reduction estimates for CARB’s original set of control measures in the 2021 Progress Report, Table 2 (excluding estimates marked as “<<0.01” or “N/A”), which sum to 25.35 tpd NO_x and 0.87 tpd direct PM_{2.5}, and subtracting the amount we propose to credit for the Carl Moyer and FARMER portions of the Agricultural Equipment Incentive Measure, which are 4.46 tpd NO_x and 0.26 tpd direct PM_{2.5}. EPA’s 2012 Annual PM_{2.5} TSD, Table IV–A. Given the complex legal authorities involved in regulating locomotive emissions, we have conservatively excluded from our analysis the emission reduction estimates in the 2021 Progress Report for CARB’s In-Use Locomotive Measure.

²²⁹ The EPA calculated these amounts by summing the updated emission reduction estimates for the District’s original set of control measures in the 2021 Progress Report, Table 3 (excluding estimates marked as “-” or “TBD”, and excluding the Agricultural Burning Phase-out Measure, which was not part of the original set), which sum to 1.69 tpd NO_x and 0.96 tpd direct PM_{2.5}, and subtracting

The combined emission reductions from these additional measures are 22.58 tpd NO_x and 1.37 tpd direct PM_{2.5}. Subtracting these amounts from the remaining aggregate tonnage commitments of 28.59 tpd NO_x and 0.51 tpd direct PM_{2.5} (*i.e.*, Row E of Table 5 of this proposed rule) would result in necessary, remaining reductions of 6.01 tpd NO_x to achieve the modeled attainment reductions and an excess 0.86 tpd direct PM_{2.5}.²³⁰ Notably, the District would have exceeded its aggregate tonnage commitments by 0.64 tpd NO_x and 0.89 tpd direct PM_{2.5}.²³¹ CARB would have remaining emission reductions of 6.65 tpd NO_x and 0.03 tpd direct PM_{2.5}.²³²

With respect to CARB’s remaining emission reductions for NO_x, as well as any future decrease in any updated emission reduction estimates in the 2021 Progress Report and/or any smaller amount of credit that the EPA may approve for those measures, we have considered the role of additional measures for which CARB and the District have not yet quantified an updated emission reduction estimate.

CARB identifies four measures of its original control measure commitments with updated emission reduction estimates of “<<0.1” or “N/A,” each of which is overdue. First, the Zero-Emission Airport Ground Support Equipment measure, for which the updated year for board consideration is not specified, had original emission reduction estimates that were quite small at <0.1 tpd NO_x and <0.1 tpd direct PM_{2.5}. Second, the Low-emission

the amount we propose to credit for Rule 4901, which is 0.2 tpd direct PM_{2.5}. EPA’s 2012 Annual PM_{2.5} TSD, Table IV–B.

²³⁰ CARB and the District estimate that, considering the updated emission reduction estimates for the original and substitute measures, the remaining aggregate tonnage commitment would be 4.65 tpd NO_x and an excess of 1.2 tpd direct PM_{2.5}. 2021 Progress Report, 30. The difference between those sums and the EPA’s sums is 0.22 tpd NO_x and 0.31 tpd direct PM_{2.5}, which reflects the difference between the SIP credit that we propose for the Agricultural Burning Phase-out Measure (0.83 tpd NO_x, and 1.23 tpd direct PM_{2.5}) and the State’s claimed reduction (1.04 tpd NO_x and 1.54 tpd direct PM_{2.5}), and the emission reduction estimate for the In-Use Locomotive Measures (1.14 tpd NO_x and 0.03 tpd direct PM_{2.5}).

²³¹ The emission reduction from Rule 4901 (0.2 tpd direct PM_{2.5}), the Agricultural Burning Phase-out Measure (0.83 tpd NO_x and 1.23 tpd direct PM_{2.5}), and additional measures sum to 2.52 tpd NO_x and 2.19 tpd direct PM_{2.5}, which would exceed the District’s 1.88 tpd NO_x and 1.3 tpd direct PM_{2.5} commitments by 0.64 tpd NO_x and 0.89 tpd direct PM_{2.5}.

²³² The emission reduction from the Carl Moyer and FARMER portions of the Agricultural Equipment Incentive Measure and additional measures sum to 25.35 tpd NO_x and 0.87 tpd direct PM_{2.5}, which would leave 6.65 tpd NO_x and 0.03 tpd direct PM_{2.5} relative to CARB’s commitments of 32 tpd NO_x and 0.9 tpd direct PM_{2.5}.

²²³ 2021 Progress Report, 19.

²²⁴ Heavy-Duty I/M ISOR and, for example, Heavy-Duty I/M ISOR, App. D (“Emissions Inventory Methods and Results, Proposed Heavy-Duty Inspection and Maintenance Regulation”) and App. H (“Proposed Heavy-Duty Inspection and Maintenance Regulation, Standardized Regulatory Impact Assessment”).

²²⁵ 2021 Progress Report, Table 2.

²²⁶ *Id.* at 20–21. Additional information on CARB’s regulatory concepts for the In-Use Locomotive Measure are available at: <https://ww2.arb.ca.gov/our-work/programs/reducing-rail-meetings-california/locomotives-and-railyards-meetings-workshops>.

²²⁷ 2021 Progress Report, 21 and Table 2.

Diesel Fuel Requirement, anticipated for 2022 board consideration, had original emission reduction estimates of 1 tpd NO_x and 0.1 tpd direct PM_{2.5}. Of these two regulatory measures, we assume the latter may result in SIP creditable emission reductions for a portion of the 1 tpd NO_x, given the one-year delay in bringing the measure to the board and corresponding likelihood of one-year delay in implementation.

Third and fourth, the Accelerated Turnover of Trucks and Buses Incentive Projects measure and the Accelerated Turnover of Off-Road Equipment Incentive Projects measure had original emission reduction estimates of 8 tpd NO_x and 1.5 tpd NO_x, respectively. As discussed in section IV.F.3.c of this proposed rule, CARB states that it continues to assess the emission reductions from these two incentive-based measures that could be applied towards the aggregate tonnage commitments.²³³ We assume that these measures may result in SIP-creditable emission reductions for a portion of the combined 9.5 tpd NO_x.

In addition, CARB has identified further measures that were not included in the original control measure commitments that may provide emission reductions toward CARB's aggregate tonnage commitments.²³⁴ These measures include Cargo Handling Equipment Registration, Construction and Mining Equipment Measure, and Co-Benefits from the Climate Program.

Similarly, the District identifies three measures of its original control measure commitments with updated emission reduction estimates of “-” or “TBD,” each of which is overdue, which we outline as follows. First and second, the regulatory measure and incentive-based measure for commercial charbroiling had original emission reduction estimates of 0.53 tpd direct PM_{2.5}. The District continues to work on this source category, including the evaluation of “potential amendments to Rule 4692 in the near future.”²³⁵ However, we assume that such amendments would not produce NO_x emission reductions.

Third, the District originally estimated emission reductions of 1.07 tpd NO_x from the combination of regulatory and incentive-based measures for stationary internal combustion engines, especially with respect to agricultural engines.²³⁶

Pending the EPA's evaluation of the 2021 amendment to Rule 4702, which claims 0.61 NO_x emission reductions in 2025, this would leave 0.46 tpd NO_x to be achieved by the Agricultural Operation Internal Combustion Engines Incentive Projects measure. We assume that this measure may result in SIP-creditable emission reductions for a portion of the combined 1.07 tpd NO_x.

The EPA does not have information at this time sufficient to quantify a precise amount of NO_x reductions that would result from the Low-emission Diesel Fuel Requirement and incentive-based measures for heavy-duty trucks, off-road equipment, and stationary agricultural internal combustion engines, nor the three additional measures identified in CARB's “SJV PM_{2.5} SIP Measure Tracking,” September 2021. Notwithstanding this uncertainty, CARB and the District state that they are “committed to fulfilling their respective aggregate commitments from the 2018 PM_{2.5} Plan and continue to progress in developing their respective measures within the Plan” and that upcoming regulations could achieve more reductions than originally anticipated.²³⁷

In addition, CARB and the District assert that the District has achieved more direct PM_{2.5} emission reductions than they committed to in their aggregate tonnage commitment.²³⁸ Accordingly, they provided additional emissions analysis to assess how excess direct PM_{2.5} emission reductions could be converted to equivalent NO_x emission reductions using an inter-pollutant trading ratio rooted in the sensitivity analyses of the 2018 PM_{2.5} Plan.²³⁹ To be clear, CARB and the District have not formally requested that the EPA apply such inter-pollutant trading for purposes of fulfilling the aggregate tonnage commitments through an equivalent amount of emission reductions. Consistent with past EPA action on PM_{2.5} planning SIP submissions for the SJV,²⁴⁰ where the State submits a SIP revision that would substitute reductions in one pollutant to achieve a tonnage commitment

concerning a different pollutant (e.g., substituting excess direct PM_{2.5} reductions to satisfy a NO_x 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 any such SIP revision.

Thus, at this time, we are not proposing to approve any particular inter-pollutant trading approach for purposes of meeting the aggregate tonnage commitments, nor applying any excess reductions of one pollutant towards fulfilling a portion of committed reductions of the other pollutant. Nevertheless, we note that because, as proposed, the District's direct PM_{2.5} reductions have exceeded their aggregate tonnage commitment, these excess reductions add a degree of conservativeness to the combined attainment demonstration and control plan. In light of the possibility of future interpollutant trading, we have qualitatively evaluated the State's inter-pollutant trading analysis as part of our assessment of the State's capability to fulfill CARB and the District's aggregate tonnage commitments, as discussed further in section IV.B.5 of the EPA's 2012 Annual PM_{2.5} TSD.

(e) Three-factor Test for Enforceable Commitments

The EPA interprets the CAA to allow for approval of enforceable commitments that are limited in scope where circumstances exist that warrant the use of such commitments in place of adopted and submitted measures.²⁴¹ 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 requirements of [the Act].” Section 172(c)(6) of the Act, which

²⁴¹ 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 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.

²³⁷ 2021 Progress Report, 2 and 32.

²³⁸ Id. at 32.

²³⁹ Id. at Table 4 and 33-37.

²⁴⁰ For example, the EPA has approved an inter-pollutant trading mechanism for use in transportation conformity analyses for the 2006 24-hour PM_{2.5} NAAQS. 85 FR 44192, 44204. In that same final rule, the EPA approved the State's demonstration that it had fulfilled prior aggregate tonnage commitments, in part, by using an inter-pollutant trading approach that the EPA found adequate. 85 FR 44192, 44205; see also proposed rule at 85 FR 17382, 17406-17407 and associated EPA's General Evaluation TSD, Table III-C and section IV.

²³³ 2021 Progress Report, 24.

²³⁴ CARB, “SJV PM_{2.5} SIP Measure Tracking,” September 2021, 3. Available at: <https://ww2.arb.ca.gov/resources/documents/2018-san-joaquin-valley-pm25-plan>.

²³⁵ 2021 Progress Report, 9.

²³⁶ 2018 PM_{2.5} Plan, Ch. 4, Table 4-3 and App. E, Table E-3.

applies to nonattainment SIPs, is virtually identical to section 110(a)(2)(A). The language in these sections of the CAA is 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.²⁴²

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 5 of this proposed rule, the majority of the emissions reductions needed to demonstrate attainment and RFP in the SJV 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 CARB and District measures, most air pollution sources in the SJV 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 4 of this proposed rule, the State needs to reduce NO_x and direct PM_{2.5} emission levels by a total of 65.4% and 10.2%, respectively, from 2013 base year levels in order to attain the 2012 annual PM_{2.5} NAAQS by the end of 2025 in the SJV.

As part of their respective control measure commitments in the SJV PM_{2.5} Plan, CARB and the District identified

potential control measures that they expected to achieve the additional emissions reductions needed for attainment. The timeline needed to develop, adopt, and implement these measures extended beyond the year of Plan adoption, with most measures originally scheduled for board consideration in 2019, 2020, and 2021. Both CARB and the District have made substantial progress in adopting the rules and measures listed in their respective control measure commitments, as well as one important substitute measure, but have not yet completely fulfilled the control measure commitments. Given these circumstances, we conclude that CARB 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.

(1) 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 5 of this proposed rule, most of the total emission reductions needed to attain the 2012 annual PM_{2.5} NAAQS in the SJV by the end of 2025 will be achieved through implementation of baseline measures and additional measures for which the EPA has finalized or proposed approval, leaving 13.8% (28.59 tpd) of the necessary NO_x reductions and 8.0% (0.51 tpd) of the necessary direct PM_{2.5} reductions as aggregate tonnage commitments.

Given the nature of the PM_{2.5} challenge in the SJV, 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 consider it reasonable for CARB and District to seek additional time to develop and adopt the last increment of emission reductions necessary for attainment by 2025.

Therefore, we conclude 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 of the 2012 annual PM_{2.5} NAAQS by December 31, 2025.

(2) 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. As discussed in section IV.F.3.c of this proposed rule and shown in tables IV.A and IV.B of the EPA’s 2012 Annual PM_{2.5} TSD, the EPA notes that CARB and the District have made substantial progress in developing and adopting the regulatory measures listed in their respective control measure commitments. Specifically, CARB and the District have adopted 18 measures of the 27 control measure commitments in the SJV PM_{2.5} Plan. CARB has adopted 10 measures (including one incentive-based measure) and begun the public process on 3 of the remaining 5 measures. The adopted measures include, for example, Heavy-Duty I/M, the California Heavy-Duty Low-NO_x Engine Standard, the SORE regulation, and the Agricultural Equipment Incentive Measure.

The District has adopted eight measures (including one incentive-based measure) and begun the public process on two of the remaining four measures. The adopted measures include, for example, amendments to Rule 4311 (“Flares”), Rule 4702 (“Internal Combustion Engines”), and Rule 4901 (“Woodburning Fireplaces and Wood Burning Heaters”) (Hot-spot strategy), and the Residential Wood Burning Devices Incentive Projects measure.

As discussed in section IV.3.d of this proposed rule, the remaining aggregate tonnage commitments sum to 28.59 tpd NO_x and 0.51 tpd direct PM_{2.5}. We also note that, pending final approval of the Agricultural Burning Phase-out Measure, that the District will have met its 1.3 tpd direct PM_{2.5} commitment and, in fact, exceeded it by 0.13 tpd. Based on our review of the State’s 2021 Progress Report, CARB has adopted 10 additional measures and advanced their development and analysis of two additional measures of the Plan’s original control measure commitments (one slated for board consideration in 2022 and one as early as 2022), and also developed a substitute measure (slated for board consideration in 2022). Similarly, beyond the two adopted measures (Rule 4901 and the Agricultural Burning Phase-out Measure) that the EPA proposes to credit towards the aggregate tonnage commitments, the District has adopted seven additional measures.

The updated emission reduction estimates for this series of additional CARB and District measures sum to

²⁴² 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 v. EPA*, 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 SJV, based on the same three factor test. *Committee for a Better Arvin v. EPA*, 786 F.3d 1169 (9th Cir. 2015).

22.58 tpd NO_x and 1.37 tpd direct PM_{2.5}. Relative to the original emission reduction estimates in the SJV PM_{2.5} Plan, these estimated emission reductions are more robust in that they reflect adopted measures and associated technical analyses, as well as further measure development and estimation. Pending the additional steps that precede submission of the measures to the EPA and the EPA's future evaluation of and rulemaking on each measure, subtracting these amounts from the remaining aggregate tonnage commitments would result in necessary, remaining reductions of 6.01 tpd NO_x to achieve the modeled attainment reductions and an excess 0.86 tpd direct PM_{2.5}. The District would have exceeded its aggregate tonnage commitments by 0.64 tpd NO_x and 0.89 tpd direct PM_{2.5}. CARB would have remaining emission reductions of 6.65 tpd NO_x and 0.03 tpd direct PM_{2.5}.

As further discussed in section IV.F.3.d of this proposed rule, we have considered the role of additional measures for which CARB and the District have not yet quantified an updated emission reduction estimate, which includes several CARB and District measures that may yet achieve sufficient emission reductions to fulfill the remaining aggregate tonnage commitment for NO_x. CARB and the District state that they are "committed to fulfilling their respective aggregate commitments from the 2018 PM_{2.5} Plan and continue to progress in developing their respective measures within the Plan" and that upcoming regulations could achieve more reductions than originally anticipated.²⁴³

Beyond the measures discussed above, both CARB and the District have well-established incentive grant programs to reduce emissions from mobile, stationary, and area sources in the SJV. Funding for the State's incentive programs in the SJV 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.²⁴⁴ 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 SJV 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.²⁴⁵

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.²⁴⁶ 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.²⁴⁷

However, CARB staff explained that, in light of the progress to-date on committed-to regulatory measures and these two substitute measures, fewer incentive-based emission reductions may ultimately be needed to demonstrate attainment of the 2012 annual PM_{2.5} NAAQS.²⁴⁸ For heavy-duty trucks and off-road equipment, CARB notes that incentives have paid for the turn-over of such equipment, but that many of the projects do not have contract lives that span the attainment year (2025) and therefore would not be creditable for the purposes of the 2012 annual PM_{2.5} NAAQS. Conversely, CARB states that it will achieve 5.1 tpd NO_x and 0.3 tpd direct PM_{2.5} emission reductions in 2025 via the Agricultural Equipment Incentive Measure, which relies on funding from the Carl Moyer, FARMER, and NRCS programs. For the two State-funded programs, CARB states that Carl Moyer funding is expected to increase in future years, following enactment of California Assembly Bill 1274,²⁴⁹ and that the recent (fiscal year 2021–2022) state budget provides \$212.6 million for FARMER program statewide²⁵⁰—the largest annual amount to date. The SJV portion of such FARMER funding has historically been 80%.²⁵¹ Given our proposal to credit the

Agricultural Equipment Incentive Measure for significant emission reductions towards CARB's aggregate tonnage commitments in 2025, the renewed, large investment in the fiscal year 2021–2022 FARMER program, and potential for increases in funding for the Carl Moyer program, the EPA anticipates that CARB will be able to develop an additional agricultural equipment incentive measure that produces SIP-creditable emission reductions.

More broadly, whether for regulatory measures or incentive-based measures, we note also that CARB and the 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. Furthermore, where CARB or the District intend to substitute reductions in one pollutant to achieve a tonnage commitment concerning a different pollutant (e.g., substituting direct PM_{2.5} reductions to satisfy a NO_x 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 CARB and the District's progress in adopting 18 measures to date, their substantial progress toward achieving the aggregate tonnage commitments, including the District having met and exceeded its direct PM_{2.5} commitment, their ongoing efforts to develop additional measures, and their stated intent to continue to fulfill their respective commitments, we propose that CARB and the District are capable of fulfilling the remaining increment of NO_x emission reductions necessary to attain the 2012 annual PM_{2.5} NAAQS in the SJV by December 31, 2025.

(3) The Commitment is for a Reasonable and Appropriate Timeframe

For the third factor, we consider whether the commitment is for a reasonable and appropriate period of time. As discussed in section II.B of this proposed rule, 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

allocated state-wide, \$108 million (80%) was directed to the SJV. Subsequent allocations to the SJV were \$104.3 million (fiscal year 2018–2019) and \$43.84 million (fiscal year 2019–2020). CARB, "Funding Agricultural Replacement Measures for Emission Reductions (FARMER) Program, San Joaquin Valley APCD," as reported through September 30, 2020.

²⁴⁵ Id.

²⁴⁶ Id. at App. E, E-8 to E-21.

²⁴⁷ Id. at App. E, Table E-4 ("Incentive Funding Needed for Expeditious Attainment"). The CARB Staff Report describes the status of current incentive funding and CARB's expectations concerning future incentive funding out to 2024 for the SJV. CARB Staff Report, section F ("Status of Incentive Funding"), 24–27.

²⁴⁸ CARB, "Valley PM_{2.5} Implementation Update and SIP Amendment," September 23, 2021, slides 22–25. Slide 25 illustrates a large decrease in the expected funding need from approximately \$5 billion over 2018–2025 to approximately \$1 billion over 2021–2025.

²⁴⁹ 2021 Progress Report, 22.

²⁵⁰ Id. at 23.

²⁵¹ In the inaugural year of the FARMER program, fiscal year 2017–2018, of the \$135 million funding

²⁴³ 2021 Progress Report, 2 and 32.

²⁴⁴ 2018 PM_{2.5} Plan, App. E, E-6.

mobile sources in the SJV.²⁵² 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 SJV.

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 SJV, compared to ozone attainment dates in the SJV and elsewhere in the State, required accelerating the pace of NO_x reductions.²⁵³ 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 2024,²⁵⁴ 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).²⁵⁵

The SJV PM_{2.5} Plan includes specific rule development, adoption, and implementation schedules designed to meet CARB and the District's commitments to reduce emissions to the levels needed to attain the 2012 annual PM_{2.5} NAAQS in the SJV by 2025. For example, the aggregate commitments in the SJV PM_{2.5} Plan include commitments by both CARB 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 CARB and District control measures.²⁵⁶

As discussed in section IV.F.3.c of this proposed rule, consistent with that schedule, CARB and the District have adopted 18 measures of the 27 control measure commitments and timely began public process on the 4 remaining regulatory measures. While CARB and the District are overdue in proposing the four remaining regulatory measures and the remaining four incentive measures to their respective boards, they have indicated that they will propose at least two of the remaining regulatory measures to their respective boards in 2022, including the Low-emission Diesel Fuel Requirement and Rule 4550 ("Conservation Management Practices"), and one more regulatory measure, the Zero-Emission Off-Road Forklift Regulation Phase 1 measure, as early as 2022.

²⁵² CARB Resolution 17-7, page 7.

²⁵³ Valley State SIP Strategy, 2-3 and 6.

²⁵⁴ CARB Resolution 18-49, page 5.

²⁵⁵ CARB Resolution 17-7, paragraph 7.

²⁵⁶ 2018 PM_{2.5} Plan, Ch. 4, tables 4-4, 4-5, and 4-8.

We consider that these schedules provide a reasonable and appropriate amount of time for CARB and the District to achieve the remaining emission reductions necessary to attain the 2012 annual PM_{2.5} NAAQS in the SJV by December 31, 2025. We therefore propose to conclude that the third factor is satisfied.

G. Reasonable Further Progress and Quantitative Milestones

1. Requirements for Reasonable Further Progress and Quantitative Milestones

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 milestones for purposes of measuring RFP, as defined in CAA section 171(1), every three years until the EPA redesignates the area 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.²⁵⁷ As discussed in EPA guidance in the General Preamble Addendum, requiring generally linear progress in reductions of direct PM and relevant PM precursors in an 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 levels over the standard), and/or
- the emission reductions necessary to attain the PM_{2.5} standards are inventory-wide.²⁵⁸

The EPA believes that the facts and circumstances of each specific area will

²⁵⁷ General Preamble Addendum, 42015.

²⁵⁸ Id.

be relevant to whether the emissions reductions meet the agency's expectations for generally linear progress.²⁵⁹

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 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 or a PM precursor on a periodic basis, rather than on a generally linear basis.²⁶⁰ 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 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.²⁶¹ 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 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 earlier to provide greater public health benefits.²⁶²

In addition to the EPA's longstanding guidance on the RFP requirements for

²⁵⁹ 80 FR 15340, 15386.

²⁶⁰ Id.

²⁶¹ General Preamble Addendum at 42016.

²⁶² Id.

PM, the Agency has established specific regulatory requirements for the PM_{2.5} NAAQS 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.²⁶³

A state intending to meet the RFP requirement on a stepwise basis must provide an appropriate justification for the selected implementation schedule.²⁶⁴ As the EPA explained in the preamble to the PM_{2.5} SIP Requirements Rule, a state 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)." ²⁶⁵ Additionally, states should estimate the RFP projected emissions for each quantitative milestone year by sector on a pollutant-by-pollutant basis.²⁶⁶

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.²⁶⁷

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.²⁶⁸ Consistent with this longstanding interpretation of the Act, the PM_{2.5} SIP Requirements Rule requires that each plan for a Serious PM_{2.5} nonattainment area that demonstrates attainment by the end of the 10th calendar year following the date of designation contain quantitative milestones to be achieved no later than milestone dates 7.5 years and 10.5 years from the date of designation of the area.²⁶⁹ The 2018 PM_{2.5} Plan includes a demonstration of attainment by the end of the 10th calendar year following designations (i.e., December 31, 2025). Because the EPA designated the SJV nonattainment for the 2012 annual PM_{2.5} NAAQS effective April 15, 2015,²⁷⁰ the applicable quantitative milestone dates for purposes of the submitted Serious area plan for this NAAQS in the SJV are October 15, 2022, and October 15, 2025.

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.²⁷¹

²⁶⁷ CAA section 189(c)(2) and 40 CFR 51.1013(b). See also, PM_{2.5} SIP Requirements Rule, 58065 and General Preamble Addendum, 42016, 42017.

²⁶⁸ General Preamble, 13539 and General Preamble Addendum, 42016.

²⁶⁹ 40 CFR 51.1013(a)(2)(i).

²⁷⁰ 80 FR 2206.

²⁷¹ 81 FR 58010, 58064 and 58092.

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 2012 annual 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.²⁷² Given the State's conclusions that ammonia, SO_x, and VOC emissions do not contribute significantly to PM_{2.5} levels that exceed the 2012 annual PM_{2.5} NAAQS in the SJV, as discussed in section IV.B of this proposed rule, the RFP demonstration provided by the State addresses emissions of direct PM_{2.5} and NO_x.²⁷³ 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.²⁷⁴ For the 2012 annual 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."²⁷⁵ 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 State estimates that emissions of direct PM_{2.5} and NO_x will generally decline from the 2013 base year to the projected 2025 attainment 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 SJV. Table H-2 in Appendix H contains an anticipated implementation schedule for District

²⁷² Appendix H to 2018 PM_{2.5} Plan, submitted February 11, 2020, via the EPA State Planning Electronic Collaboration System. This revised 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.

²⁷³ 2018 PM_{2.5} Plan, App. H, H-1.

²⁷⁴ Id. at App. H, H-23 to H-24 (for CARB milestones) and H-20 to H-22 (for District milestones).

²⁷⁵ Id. at App. H, H-4.

²⁶³ 40 CFR 51.1012(a).

²⁶⁴ 40 CFR 51.1012(a)(4).

²⁶⁵ 81 FR 58010, 58057.

²⁶⁶ Id. at 58056.

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 SJV. Table H–5 in Appendix H

(reproduced in Table 6 of this proposed rule) 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 by 2025.²⁷⁶

TABLE 6—PM_{2.5} PROJECTED EMISSIONS INVENTORY FOR BASE AND MILESTONE YEARS, INCLUDING BASELINE MEASURES AND EMISSION REDUCTION COMMITMENTS
[Annual average, tpd]

Pollutant	2013	2019 ^a	2022	2025
	Baseline year	Quantitative milestone	Quantitative milestone	Quantitative milestone and attainment year
PM _{2.5}	62.5	59.2	58.4	56.1
NO _x	317.2	214.5	179.8	109.8

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

^a2019 is a quantitative milestone year in the SJV for the 2012 annual PM_{2.5} NAAQS for purposes of CAA requirements for Moderate PM_{2.5} nonattainment areas.

Table H–6 and Table H–7 of Appendix H (reproduced in Table 7 of this proposed rule) identify the

reductions needed for attainment of the 2012 annual PM_{2.5} NAAQS by 2025, and

the SJV’s projected progress toward attainment in each milestone year.

TABLE 7—EMISSION REDUCTIONS NEEDED FOR ATTAINMENT AND ACHIEVED IN EACH MILESTONE YEAR
[Annual average]

Pollutant	Reductions needed for attainment (from 2013 baseline)	Percent reductions achieved in milestone year		
		2019	2022	2025
		Quantitative milestone	Quantitative milestone	Attainment year
PM _{2.5}	6.4 tpd	51.6	64.1	100
NO _x	207.4 tpd	49.5	66.2	100

Source: 2018 PM_{2.5} Plan, Appendix H, tables H–6 and H–7.

Based on the data in tables 6 and 7 of this proposed rule, CARB and the District set RFP targets for the attainment year and quantitative milestone years as shown in Table H–11 of Appendix H (reproduced in Table 8 of this proposed rule). The targets are consistent with a stepwise approach to demonstrating RFP. The emission projections show steady reductions over time. The reductions between the 2013 base year and the 2019 milestone year (51.6% of the direct PM_{2.5} reductions and 49.5% of the NO_x reductions

needed for attainment), which we evaluated in the context of the Moderate area requirements for RFP and quantitative milestones, are consistent with a generally linear approach to demonstrating RFP. Emissions further decrease by the 2022 milestone year but fall short of the rate of reductions that would show generally linear progress toward attainment.²⁷⁷ The Plan relies on a more substantial direct PM_{2.5} and NO_x emission reduction by 2025 due, in large part, to CARB and the District’s commitments to achieve additional

PM_{2.5} emission reductions from new measures by 2025.

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 2025 attainment year. Based on these analyses, CARB and the District assert that the adopted control strategy and additional commitments for reductions from new control programs by 2025 are adequate to meet the RFP requirement for the 2012 annual PM_{2.5} NAAQS.

TABLE 8—STEPWISE RFP TARGET EMISSION LEVELS AND PROJECTED EMISSION LEVELS FOR MILESTONE AND ATTAINMENT YEARS
[Annual average, tpd]

Pollutant	2019		2022		2025	
	Target	Projected	Target	Projected	Target	Projected
PM _{2.5}	59.2	59.2	58.4	58.4	56.1	56.1

²⁷⁶In 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 by 2024 and 2025.

²⁷⁷To show generally linear progress, emissions would need to decrease by approximately 75% from

2013 to 2022. The projected decrease for this span of years is 64.1% for direct PM_{2.5} and 66.2% for NO_x.

TABLE 8—STEPWISE RFP TARGET EMISSION LEVELS AND PROJECTED EMISSION LEVELS FOR MILESTONE AND ATTAINMENT YEARS—Continued
[Annual average, tpd]

Pollutant	2019		2022		2025	
	Target	Projected	Target	Projected	Target	Projected
NO _x	214.5	214.5	179.8	179.8	109.8	109.8

Source: 2018 PM_{2.5} Plan, Appendix H, Table H-11.

CARB and the District’s control strategy in the 2018 PM_{2.5} Plan for attaining the 2012 annual PM_{2.5} NAAQS relies on ongoing reductions from baseline measures 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. The attainment control strategy in the Plan is projected to achieve total emission reductions of 207.4 tpd NO_x and 6.4 tpd direct PM_{2.5}, of which 78% (162 tpd) and 73% (4.7 tpd), respectively, are attributed to CARB’s baseline mobile source program.²⁷⁸ These on-going controls will thus result in additional reductions in NO_x and direct PM_{2.5} emissions between the 2013 base year and 2025 attainment year.²⁷⁹

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 SJV, 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 In-Use Off-Road Diesel-Fueled Fleets Regulation (“Off-Road Regulation”), the California Low-NO_x Engine Standard for new on-road heavy-duty engines used in medium- and heavy-duty trucks purchased in California, Heavy-Duty I/M, and the second phase of the Advanced Clean Cars Program (“ACC 2”).²⁸⁰ CARB’s

mobile source BACM 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.²⁸¹ CARB’s emission projections for mobile sources are presented in the Plan’s emissions inventory.²⁸²

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 2023.²⁸³ 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 SJV and all heavier trucks with 1995 and older model year engines were required to have a 2010 engine installed or to be replaced by a truck with a 2010 MY engine.²⁸⁴

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 engines or vehicles with newer, cleaner models, (2) retire older vehicles or reduce their use, or (3) apply retrofit exhaust controls.²⁸⁵ 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.²⁸⁶ 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.²⁸⁷ These measures include seven rule amendments that the District adopted in 2019 through 2021, as discussed in section IV.F.3.c of this proposed rule and tabulated in Table IV-B of the EPA’s 2012 Annual PM_{2.5} TSD.

With respect to the 2022 milestone year, Rule 4354 was amended in 2011 to lower certain limits on emissions of NO_x, SO_x, and PM₁₀ from container glass, flat glass, and fiberglass manufacturing facilities. Rule 4702 was 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 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), with implementation beginning November 1, 2019. These rules contribute to additional emission

²⁷⁸ Id. at Ch. 4, Table 4–7.

²⁷⁹ Id. at App. H, H–4.

²⁸⁰ 2018 PM_{2.5} Plan, App. H, H–21 and H–22. Because the ACC 2 measure is not scheduled for implementation until 2026 (see 2018 PM_{2.5} Plan, Table 4–8), which is after the January 1, 2025 implementation deadline under 40 CFR 51.1011(b)(5) for control measures necessary for attainment by December 31, 2025, we are not reviewing this program as part of the control strategy in the SJV PM_{2.5} Plan.

²⁸¹ 2018 PM_{2.5} Plan, App. D, Ch. IV.

²⁸² 2018 PM_{2.5} Plan, App. B.

²⁸³ The State’s quantitative milestone report for the 2019 milestone indicates that the requirement for heavier trucks to install diesel particulate filters was fully implemented by 2016. CARB and SJVUAPCD, “2019 Quantitative Milestone Report for the 2012 PM_{2.5} NAAQS,” 7, submitted by letter dated January 13, 2020, from Richard W. Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region IX, with enclosures, 7.

²⁸⁴ Id.

²⁸⁵ 2019 QM Report, 9.

²⁸⁶ 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.

²⁸⁷ 2018 PM_{2.5} Plan, App. H, Table H–2.

reductions of direct PM_{2.5} and NO_x from the 2013 base year to the 2022 RFP milestone year. 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.²⁸⁸

For the remainder of the emission reductions necessary for attainment, the SJV PM_{2.5} Plan identifies a series of additional CARB and District commitments to achieve emission reductions through additional control measures and incentive programs that will contribute to attainment of the 2012 annual PM_{2.5} NAAQS by 2025, as discussed in section IV.F.3.c of this proposed rule. For mobile sources, CARB's commitment identifies a list of 12 regulatory measures and 3 incentive-based measures that CARB has committed to propose to its Board for consideration by specific dates.²⁸⁹ 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.²⁹⁰ Both CARB and the District have committed to achieve specific amounts of reductions in direct PM_{2.5} and NO_x emissions by 2025, either through implementation of these listed measures or through implementation of other control measures that achieve the necessary amounts of emission reductions by 2025.²⁹¹

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.²⁹² 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.²⁹³ 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 Board²⁹⁴ 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.²⁹⁵

The anticipated implementation schedule for new CARB measures is presented in Table 4–8 of the 2018 PM_{2.5} Plan and 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. We summarize these schedules, as well as the compliance schedules for those District measures that have been adopted by December 2021, in Table IV–A (for CARB measures) and Table IV–B (for District measures) of the EPA's 2012 Annual PM_{2.5} TSD. For example, implementation of Rule 4901 began November 1, 2019, and implementation for Rules 4311, 4306, 4320, and 4702 will begin December 31, 2023.

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.”²⁹⁶

CARB and the District discussed in greater detail a number of specific implementation challenges as part of their justification for meeting the RFP requirement by the stepwise approach in the Plan. For NO_x, the new control measures that CARB and the District anticipate implementing toward the end of the attainment period can be found in tables 4–4, 4–5, and 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.”²⁹⁷

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 Heavy-Duty I/M was affirmed by California legislative action in 2019, and CARB was working on program design and infrastructure to implement new legislative direction.²⁹⁸ For the California 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 development of these measures has now culminated in adoption of Heavy-Duty I/M in December 2021 and the California Low-NO_x Engine Standard in August 2020, with implementation beginning in 2023 and 2024, respectively.

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 Tables 4–4, 4–5, and 4–8 of the 2018 PM_{2.5} Plan. CARB's additional measures are expected to achieve 0.9 tpd of direct

²⁸⁸ 2018 PM_{2.5} Plan, App. B and App. C.

²⁸⁹ 2018 PM_{2.5} Plan, Chapter 4, Table 4–8 and CARB Resolution 18–49, 5. Table 4–8 of the 2018 PM_{2.5} Plan lists 14 State regulatory measures, but we are excluding from our review the ACC 2 measure and the “Cleaner In-Use Agricultural Equipment” measure because these measures are scheduled for implementation in 2026 and 2030, respectively, which fall after the January 1, 2025 implementation deadline for control measures necessary for attainment by December 31, 2025. 40 CFR 51.1011(b)(5).

²⁹⁰ 2018 PM_{2.5} Plan, Chapter 4, Table 4–4 and SJVUAPCD Governing Board Resolution 18–11–16, 10–11.

²⁹¹ SJVUAPCD Governing Board Resolution 18–11–16, 10–11 and CARB Resolution 18–49, 5.

²⁹² 2018 PM_{2.5} Plan, Chapter 4, 4–12 and 4–15 to 4–22.

²⁹³ *Id.* at 4–22 to 4–24.

²⁹⁴ 2018 PM_{2.5} Plan, Chapter 4, Table 4–8 and CARB Resolution 18–49, 5.

²⁹⁵ 2018 PM_{2.5} Plan, tables 4–4 and 4–5, and SJVUAPCD Governing Board Resolution 18–11–16, 10–11.

²⁹⁶ 2018 PM_{2.5} Plan, App. H, H–7.

²⁹⁷ 2018 PM_{2.5} Plan, App. H, H–8.

²⁹⁸ California Senate Bill 210, signed September 20, 2019.

PM_{2.5} emission reductions²⁹⁹ and the District's additional measures are expected to achieve 1.3 tpd of direct PM_{2.5} emission reductions by 2025.³⁰⁰ New or revised District measures are thus expected to achieve a significant portion of CARB and the District's 2.2 tpd direct PM_{2.5} emission reduction commitment for the 2025 attainment year.

As discussed in section IV.F.3.c of this proposed rule, CARB and the District have adopted 18 measures of the 27 control measure commitments, a majority of which will achieve direct PM_{2.5} emission reductions in the SJV. In doing so, CARB and the District concurrently developed and adopted measures for wide-ranging emission sources such as heavy-duty trucks, agricultural equipment, local trucks, small off-road engines, flares, boilers, stationary internal combustion engines, and residential wood burning.

With respect to the commercial charbroiling, 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.³⁰¹ Because of ongoing uncertainties about the technological and economic feasibility of controls for under-fired charbroiling (UFC), the District 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, and the EPA approved the rule amendments into the California SIP on September 14, 2020.³⁰²

While the District has not proposed to its Governing Board amendments to Rule 4692 that impose new control requirements on UFCs, in presenting the District's "Commercial Underfired Charbroiling Emission Reduction Strategy" to its Governing Board on December 17, 2020, the District expressed continued difficulty in identifying feasible control technologies

for under-fired charbroiling restaurants, particularly given the "unprecedented impacts of the COVID-19 pandemic to the restaurant industry" that limited revenue streams.³⁰³ Nevertheless, the District continues to work on this source category, including the evaluation of "potential amendments to Rule 4692 in the near future."³⁰⁴

The 2018 PM_{2.5} Plan also shows that a portion of the necessary direct PM_{2.5} emission reductions in 2025 (0.32 of 2.2 tpd) is expected to result from a revised version of the District's Conservation Management Practices (CMP) rule (Rule 4550), which is designed to reduce particulate emissions from agricultural operations.³⁰⁵ The District hosted a public scoping meeting on potential amendments to Rule 4550 on December 16, 2021,³⁰⁶ and anticipates proposing this revised rule to the SJVUAPCD Governing Board in 2022 and implementing it beginning in 2024.³⁰⁷ 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.³⁰⁸ 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.³⁰⁹

(b) Quantitative Milestones

Appendix H of the 2018 PM_{2.5} Plan identifies October 15 milestone dates for the 2019 and 2022 RFP milestone years, the 2025 attainment year, and a post-

attainment milestone year of 2028.³¹⁰ 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,³¹¹ as shown in Table 6 of this proposed rule, and control measures that CARB and the District plan to implement by each of these years, in accordance with the control strategy in the Plan.³¹²

We note, however, that while quantitative milestones are required for 2019 in the context of the Moderate area plan for the 2012 annual PM_{2.5} NAAQS in the SJV (corresponding to the 4.5 years after the date of designation), we have already evaluated and approved the State's quantitative milestones for 2019, as supplemented by the 2018 PM_{2.5} Plan.³¹³ Therefore, the EPA is not evaluating the 2019 milestones for purposes of the State's Serious area plan for the 2012 annual PM_{2.5} NAAQS in the SJV. Similarly, given that the 2018 PM_{2.5} Plan includes a demonstration of attainment by the 10th calendar year following designations, quantitative milestones are not required beyond 10.5 years after the date of designation (*i.e.*, October 15, 2025). Therefore, the EPA is not evaluating the 2028 milestones for purposes of the submitted Serious area plan.

The 2018 PM_{2.5} Plan estimates that emissions of direct PM_{2.5} and NO_x will generally decline from the 2013 base year to the 2025 attainment year and that direct PM_{2.5} and NO_x are emitted by a large number and range of sources in the SJV. With respect to emission reductions, the 2018 PM_{2.5} Plan relies on the baseline measures reflected in the Plan's emissions inventory to demonstrate RFP through 2022.³¹⁴

In addition to these baseline measures, the 2018 PM_{2.5} Plan's control strategy includes specific control measure commitments for purposes of attaining the 2012 annual PM_{2.5} NAAQS by 2025, including commitments by CARB and the District to develop and propose to their respective boards specific regulatory and incentive-based measures identified in the plan by specific years leading up to 2025, including 2019 and 2022.³¹⁵ Although

³¹⁰ 2018 PM_{2.5} Plan, App. H, Table H-12.

³¹¹ *Id.* at Table H-5.

³¹² *Id.* at H-23 to H-24 (for CARB milestones) and H-20 to H-22 (for District milestones).

³¹³ 86 FR 67343, 67346.

³¹⁴ 2018 PM_{2.5} Plan, App. H, H-4 to H-15.

³¹⁵ CARB Resolution 18-49, 5; 2018 PM_{2.5} Plan, Ch. 4, Table 4-8; 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"); CARB 2018

²⁹⁹ 2018 PM_{2.5} Plan, Ch. 4, Table 4-9.

³⁰⁰ *Id.* at Table 4-3. As discussed in section IV.F.3.d of this proposed rule, pending final approval of the Agricultural Burning Phase-out Measure, the District would have met its direct PM_{2.5} emission reduction commitment of 1.3 tpd and, in fact, exceeded it by 0.13 tpd.

³⁰¹ 2018 PM_{2.5} Plan, App. C, C-209 to C-210.

³⁰² 85 FR 56521.

³⁰³ SJVUAPCD, "Item Number 11: Adopt Proposed Commercial Under-fired Charbroiling Emission Reduction Strategy," December 17, 2020, 2.

³⁰⁴ 2021 Progress Report, 9.

³⁰⁵ 2018 PM_{2.5} Plan, Ch. 4, Table 4-3.

³⁰⁶ SJVUAPCD, "Notice of Public Scoping Meeting, Rule 4550 (Conservation Management Practices)," December 2, 2021. The District also held 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, "Air Quality Workshop Series Focused on Conservation Management Practices (CMP) Plans," available at https://www.valleyair.org/Workshops/postings/2020/2020_CMP/notice.pdf.

³⁰⁷ 2018 PM_{2.5} Plan, Ch. 4, Table 4-4.

³⁰⁸ 2018 PM_{2.5} Plan, App. C, C-203.

³⁰⁹ *Id.* at C-203.

the attainment demonstration does not rely on these control measure commitments for emission reductions until 2025,³¹⁶ the RFP and quantitative milestone elements of the 2018 PM_{2.5} Plan rely on these control measure commitments to demonstrate that the plan requires RFP toward attainment.³¹⁷

For the 2022 milestone year, Appendix H of the 2018 PM_{2.5} Plan describes the District's quantitative milestone as a report on "[t]he status of SIP measures adopted between 2019 and 2022 as per the schedule included in the adopted Plan, including *Residential Wood Burning Strategy* and *Commercial Under-Fired Charbroiler* incentive-based strategy."³¹⁸ The schedule for development of new or revised SIP measures in the 2018 PM_{2.5} Plan identifies "action dates" between 2019 and 2022 for 12 District measures listed in tables 4-4 and 4-5 of Chapter 4, including, for example, Rule 4311 ("Flares"), Rule 4702 ("Internal Combustion Engines") and Rule 4354 ("Glass Melting Furnaces").³¹⁹

Appendix H describes CARB's quantitative milestone as a report on two measure-specific milestones: (1) Actions taken between 2019 and 2022 to implement the Truck and Bus Regulation that required particulate filters and cleaner engine standards on existing heavy-duty diesel trucks and buses in California, and (2) the "status of SIP measures adopted between 2019 and 2022, including *Advanced Clean Cars 2* and the *Heavy-Duty Vehicle Inspection and Maintenance Program*."³²⁰ The schedule for development of new or revised CARB

measures in the 2018 PM_{2.5} Plan identifies "action" dates between 2019 and 2022 for 13 CARB measures listed in Table 4-8 of Chapter 4, including, for example, Heavy-Duty I/M, the SORE regulation, and the Low-Emission Diesel Fuel Requirement.³²¹

For the 2025 attainment year, Appendix H of the 2018 PM_{2.5} Plan describes the District's quantitative milestone as a report on "[i]mplementation of amendments to *Residential Wood Burning Strategy*, including any regulatory amendments and enhancements to the District Burn Cleaner incentive program," "[i]mplementation of amendments to the *Commercial Under-Fired [Charbroiler] Strategy*, including any regulatory amendments and implementation of related incentive-based strategy," and "[t]he status of SIP measures adopted between 2022 and 2025 as per the schedule included in the adopted Plan."³²² The schedule for development of new or revised SIP control measures in the 2018 PM_{2.5} Plan identifies "action dates" between 2022 and 2025 for one District measure: Rule 4550 ("Conservation Management Practices").³²³

Appendix H describes CARB's quantitative milestone as a report on three measure-specific milestones: (1) "[i]dentify the number of pieces of agricultural equipment turned over to Tier 4 Final due to the *Accelerated Turnover of Agricultural Tractors Measure* through 2025;" (2) "[i]dentify the number of trucks and buses turned over to a low-NO_x engine or cleaner due to the *Accelerated Turnover of Trucks and Buses Measure* through 2025;" and (3) "[t]he status of SIP measures adopted between 2022 and 2025, including the *proposed Cleaner In-Use Agricultural Equipment Measure* to incentivize the penetration of cleaner agricultural equipment used in California."³²⁴ The schedule for development of new or

revised CARB measures in the 2018 PM_{2.5} Plan identifies "action" dates between 2022 and 2025 for one CARB measure: The Cleaner In-Use Agricultural Equipment measure.³²⁵

3. EPA 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 and BACT control measures and CARB and the District's aggregate tonnage commitments, as required by 40 CFR 51.1012(a)(1). The implementation schedule is found in Tables 4-4, 4-5, and 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 and BACT for direct PM_{2.5} and NO_x emissions in the Valley as expeditiously as practicable.³²⁶

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) and commitments to achieve additional reductions from new measures by 2025, and reflect full implementation of the State's, District's, and MPOs' attainment control strategy for these pollutants.

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 2025 attainment year as required by 40 CFR 51.1012(a)(3). Tables 7 and 8 of this proposed rule show decreases in emissions levels in each milestone year, leading to the achievement of the reductions required for attainment in 2025.

Staff Report, 14; SJVUAPCD Governing Board Resolution 18-11-16, 10-11; 2018 PM_{2.5} Plan, Ch. 4, tables 4-4 and 4-5; 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").

³¹⁶ 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").

³¹⁷ 2018 PM_{2.5} Plan, App. H, H-4 to H-10 (describing commitments by CARB and SJVUAPCD to adopt additional measures to fulfill tonnage commitments for 2024 and 2025, including "action" and "implementation" dates occurring before 2024 to ensure expeditious progress toward attainment).

³¹⁸ 2018 PM_{2.5} Plan, App. H, H-20.

³¹⁹ 2018 PM_{2.5} Plan, Ch. 4, 4-12 and 4-13 (tables 4-4 and 4-5). See also 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," stating the District's intent to take action on the listed rules and measures by beginning the public process on each measure and then proposing the rule or measure to the SJVUAPCD Governing Board).

³²⁰ 2018 PM_{2.5} Plan, App. H, H-23.

³²¹ 2018 PM_{2.5} Plan, Ch. 4, 4-28 (Table 4-8). See also 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 2018 Staff Report, 14-15 (stating CARB's intent to "bring to the Board or take action on the list of proposed State measures for the Valley" by the action dates specified in Table 2).

³²² 2018 PM_{2.5} Plan, App. H, H-20 to H-21.

³²³ 2018 PM_{2.5} Plan, Ch. 4, 4-12 (Table 4-4). See also 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," stating the District's intent to take action on the listed rules and measures by beginning the public process on each measure and then proposing the rule or measure to the SJVUAPCD Governing Board).

³²⁴ 2018 PM_{2.5} Plan, App. H, H-23.

³²⁵ 2018 PM_{2.5} Plan, Ch. 4, 4-28 (Table 4-8). See also 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 2018 Staff Report, 14-15 (stating CARB's intent to "bring to the Board or take action on the list of proposed State measures for the Valley" by the action dates specified in Table 2).

³²⁶ The BACM/BACT 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.

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 by 2025 is primarily due to commitments by CARB and the District to achieve reductions from new control measures by 2025. CARB and the District's justifications for their selected implementation schedules, *i.e.*, for the delay 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 CARB and the District have committed to propose to their respective boards certain new or revised control measures in the years leading up to the 2025 attainment year, the only enforceable commitment in the Plan that requires adoption of control measures is the tonnage commitment for reductions by 2025, which provides the basis for the stepwise approach to RFP.

(b) Quantitative Milestones

Appendix H of the 2018 PM_{2.5} Plan identifies milestone dates for the Serious plan (*i.e.*, October 15, 2022, and October 15, 2025) that are consistent with the requirements of 40 CFR 51.1013(a)(2)(i) 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 2012 annual PM_{2.5} NAAQS.

CARB'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 SJV. 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, conservation management practices,

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 CARB and the District's progress in implementing their respective control measure and aggregate tonnage commitments and, thus, provide for objective evaluation of the SJV'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 2012 annual PM_{2.5} NAAQS in the SJV.

We note that on January 13, 2020, CARB submitted the "2019 Quantitative Milestone Report for the 2012 PM_{2.5} NAAQS ("SJV 2019 QM Report") for the Moderate area plan to the EPA,³²⁷ which the EPA is currently reviewing.

H. Contingency Measures

1. Requirements for Contingency Measures

Under CAA section 172(c)(9), states required to make an attainment plan SIP submission must include contingency measures that they will implement if the area fails to meet RFP ("RFP contingency measures") or fails to attain the NAAQS by the applicable attainment date ("attainment contingency measures"). Under the PM_{2.5} SIP Requirements Rule, states must include contingency measures that will be implemented following a determination by the EPA that the state has failed: (1) To meet any RFP requirement in the approved attainment plan; (2) to meet any quantitative milestone in the approved attainment plan; (3) to submit a required quantitative milestone report; or (4) to attain the applicable PM_{2.5} NAAQS by the applicable attainment date.³²⁸ Contingency measures must be fully adopted rules or control measures that are ready to be implemented quickly and without significant further action by the state or the EPA upon failure to meet RFP or failure of the area to meet the relevant NAAQS by the applicable attainment date.³²⁹

The purpose of contingency measures is to continue progress in reducing emissions while a state revises its SIP to meet the missed RFP requirement or to

correct ongoing nonattainment. Neither the CAA nor the EPA's implementing regulations establish a specific amount of emission reductions that implementation of contingency measures must achieve, but the EPA recommends that contingency measures should provide for emission reductions equivalent to approximately one year of reductions needed for RFP in the nonattainment area, calculated as the overall level of reductions needed to demonstrate attainment divided by the number of years from the base year to the attainment year. In general, we expect all actions needed to effect full implementation of the measures to occur within 60 days after the EPA notifies the state of a failure to meet RFP or to attain.³³⁰

To satisfy the requirements of 40 CFR 51.1014, the contingency measures adopted as part of a PM_{2.5} attainment plan must consist of control measures for the area that are not otherwise required to meet other attainment plan requirements (*e.g.*, to meet RACM/RACT requirements) and must specify the timeframe within which their requirements become effective following any of the EPA determinations specified in 40 CFR 51.1014(a). To meet CAA section 172(c)(9), contingency measures must be measures that are triggered and implemented only after the EPA determines that an area fails to meet RFP requirements or to attain by the applicable attainment date, and the state must not have begun to implement such measures before this determination is made. Thus, already-implemented measures cannot serve as contingency measures under CAA section 172(c)(9).³³¹

2. Summary of State's Submission

The 2018 PM_{2.5} Plan addresses the contingency measure requirement for the 2012 annual PM_{2.5} NAAQS by reference to the contingency measure portion of a separate December 2018 SIP submission that involved enhanced enforcement of CARB regulations in the SJV, a commitment to amend the District's residential wood burning rule (*i.e.*, District Rule 4901) to include contingent provisions, and emissions estimates for the year following the attainment year for use in evaluating whether the emissions reductions from the contingency measures are

³²⁷ Letter dated January 13, 2020, from Richard W. Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region IX, with enclosures.

³²⁸ 40 CFR 51.1014(a).

³²⁹ 81 FR 58010, 58066 and General Preamble Addendum, 42015.

³³⁰ 81 FR 58010, 58066. See also General Preamble 13512, 13543–13544, and General Preamble Addendum, 42014–42015.

³³¹ See *Bahr v. EPA*, 836 F.3d 1218, 1235 (9th Cir. 2016), *Sierra Club v. EPA*, 985 F.3d 1055 (DC Cir. 2021), and *Assoc. of Irrigated Residents v. EPA*, 10 F.4th 937 (9th Cir. 2021).

sufficient.³³² In January 2021, CARB withdrew the enhanced enforcement portion of the December 2018 SIP submission as it pertained to the 2012 annual PM_{2.5} NAAQS in the SJV.³³³

With respect to the District contingency measure, the 2018 PM_{2.5} Plan states that the District will amend District Rule 4901 to include a requirement that would be triggered should the EPA issue a final rulemaking that the SJV failed to meet a regulatory requirement necessitating implementation of a contingency measure.³³⁴ The District adopted amendments to Rule 4901 on June 20, 2019, including a contingency measure in section 5.7.3 of the amended rule, and CARB submitted the amended rule to the EPA for approval on July 22, 2019.³³⁵ In this proposal, we are evaluating District Rule 4901, specifically, section 5.7.3, for compliance with the requirements for contingency measures for purposes of meeting the Serious area planning requirements for the 2012 annual PM_{2.5} NAAQS.

District Rule 4901 is designed to limit emissions 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 for advertising the sale of seasoned wood consistent with a moisture content limit within the SJV.

The rule includes a two-tiered, episodic wood burning curtailment requirement that applies during four winter months, November through February. During a level one episodic wood burning curtailment, section 5.7.1 prohibits any person from operating a wood burning fireplace or unregistered wood burning heater but permits the use of a properly operated wood burning heater that meets certification requirements and has a current registration with the District. Sections 5.9 through 5.11 impose specific registration requirements on any person operating a wood burning fireplace or wood burning heater and section 5.12 imposes specific certification requirements on wood burning heater

professionals. During a level two episodic wood burning curtailment, operation of any wood burning device is prohibited by section 5.7.2.

Prior to the 2019–2020 wood burning season, the District imposed a level one curtailment when the PM_{2.5} concentration was forecasted to be between 20–65 µg/m³ and imposed a level two curtailment when the PM_{2.5} concentration was forecasted to be above 65 µg/m³ or the PM₁₀ concentration was forecasted to be above 135 µg/m³. In 2019, the District adopted revisions to Rule 4901 to lower the wood burning curtailment thresholds in the “hot spot” counties of Madera, Fresno, and Kern. The District lowered the level one PM_{2.5} threshold for these three counties from 20 µg/m³ to 12 µg/m³, and the level two PM_{2.5} threshold from 65 µg/m³ to 35 µg/m³. The District did not modify the curtailment thresholds for other counties in the SJV—those levels remained at 20 µg/m³ for level one and 65 µg/m³ for level two.

The District’s 2019 revision to Rule 4901 also included the addition of a contingency measure in section 5.7.3 of the rule, requiring that 60 days following the effective date of an EPA final rulemaking that the SJV has failed to attain the 1997, 2006, or 2012 PM_{2.5} NAAQS by the applicable attainment date, the PM_{2.5} curtailment levels for any county that has failed to attain the applicable standard will be lowered to the curtailment levels in place for hot spot counties. The District estimates that the potential emissions reduction in direct PM_{2.5} would be in the range of 0.014 tpd (if the contingency is triggered in Kings County but not the other non-hot-spot counties) to 0.387 tpd (if the contingency is triggered in all five of the non-hot-spot counties), but there would be no emissions reduction if, at the time of the determination of failure to attain the 2012 annual PM_{2.5} NAAQS by the attainment date, violations of the 2012 annual PM_{2.5} NAAQS occurred only at monitors in the hot-spot counties.³³⁶ The corresponding potential NO_x emissions reduction would be in the range of 0.002 tpd to 0.060 tpd, respectively, but as previously noted there would be no emissions reduction if the monitored violations occur in the hot-spot counties only.³³⁷

3. EPA Evaluation and Proposed Action

We have evaluated the contingency measure element of the 2018 PM_{2.5} Plan and associated contingency measure in District Rule 4901 (*i.e.*, section 5.7.3 of the rule) against the requirements of CAA section 172(c)(9) and 40 CFR 51.1014 for both attainment and RFP contingency measures, and the related requirements for submission of quantitative milestone reports and compliance with quantitative milestones. We propose to find that the contingency measure element of the 2018 PM_{2.5} Plan (and contingency measure in District Rule 4901) is inadequate to meet the Serious area contingency measure requirements for the 2012 annual PM_{2.5} NAAQS for several reasons.

As noted in our summary of the State’s submission, the contingency measure in District Rule 4901 is structured to provide for implementation if the area fails to attain the 2012 annual PM_{2.5} NAAQS, not before, and is therefore consistent with the requirement under CAA section 172(c)(9) that contingency measures be prospective and conditional, rather than already being implemented. However, as structured, the contingency measure of Rule 4901 (*i.e.*, section 5.7.3) would provide for emissions reductions only in Kings, Merced, San Joaquin, Stanislaus, and/or Tulare counties, not the “hot spot” counties of Fresno, Kern, and Madera, and only if a violating monitoring site (*i.e.*, a site where the collected data represent a violation of the NAAQS) is located in such county. In other words, if the EPA’s determination of failure to attain the NAAQS by the applicable attainment date indicates violations at monitoring sites in Fresno and Kern (“hot spot” counties) and Tulare (non-hot-spot county) counties, the contingency measure would provide for emissions reductions by lowering the wood burning curtailment thresholds in Tulare County only. The “hot spot” counties are already subject to the lower wood burning curtailment thresholds in the rule and thus would not be affected by the finding of failure to attain determination and the other non-“hot spot” counties (*i.e.*, other than Tulare County in this example) would not be subject to the lower wood burning curtailment thresholds.

In accordance with 40 CFR 51.1014, the contingency measure in District Rule 4901 identifies a specific triggering mechanism. In this case, the triggering mechanism in the rule is the EPA’s final determination that the SJV has failed to attain the 2012 annual PM_{2.5} NAAQS by

³³² 2018 PM_{2.5} Plan, App. H (revised February 11, 2020), H–24 to H–26.

³³³ Letter dated January 8, 2021, from Richard W. Corey, Executive Officer, CARB, to John W. Busterud, Regional Administrator, EPA Region IX, with enclosures.

³³⁴ 2018 PM_{2.5} Plan, App. H, H–25.

³³⁵ SJVUAPCD Rule 4901, as amended on June 20, 2019, was submitted electronically to the EPA on July 22, 2019, as an attachment to a letter dated July 19, 2019, from Richard W. Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region IX.

³³⁶ See Table B–13 in Appendix B from the District’s Final Staff Report (June 20, 2019) for revisions to Rule 4901.

³³⁷ NO_x emissions reductions from the contingency measure are based on the District’s estimates for direct PM_{2.5} emissions using the ratio of direct PM_{2.5} to NO_x in Table 1 of the District’s Final Staff Report (June 20, 2019) for revisions to Rule 4901.

the applicable attainment date.³³⁸ The rule also specifies a timeframe within which its requirements become effective after a failure-to-attain determination (*i.e.*, on and after 60 days from the effective date of the EPA's final determination), and would take effect with minimal further action by the state or the EPA. However, the contingency measure in District Rule 4901 does not address the potential for State failures to meet a quantitative milestone, submit a quantitative milestone report, or failure to meet an RFP requirement.³³⁹

In addition, the contingency measure provision of Rule 4901 is not structured to achieve any additional emissions reductions if the EPA finds that monitoring locations in the "hot spot" counties (*i.e.*, Fresno, Kern, or Madera Counties) are the only ones in the SJV that are violating the 2012 annual PM_{2.5} NAAQS as of the attainment date. To qualify as a contingency measure, a measure must be structured to achieve emissions reductions if triggered, and the contingency measure of District Rule 4901 provides for such reductions only under certain circumstances. If the District intends to retain a contingency provision in Rule 4901, the District should revise the rule to provide for additional emissions reductions in the SJV (if triggered) regardless of which monitoring site(s) is determined to be violating the 2012 annual PM_{2.5} NAAQS as of the attainment date.³⁴⁰

³³⁸ Section 5.7.3 of Rule 4901 states that "the District shall notify the public of an Episodic Curtailment for the PM_{2.5} curtailment levels described in Sections 5.7.1.2 and 5.7.2.2 for any county that has failed to attain the applicable standard." (emphasis added) We interpret this to mean that the District would apply the more stringent curtailment provisions for any county identified in the EPA's final rule making the determination that the SJV failed to attain the applicable PM_{2.5} NAAQS.

³³⁹ We note that section 5.7.3 of District Rule 4901 applies the lower thresholds "on and after sixty days following the effective date of EPA final rulemaking," which is appropriate as a contingency measure trigger for a failure to attain by the applicable attainment date given that the EPA conducts rulemaking to make such determinations. However, for the three other contingency triggers, *i.e.*, State failures to meet a quantitative milestone, submit a quantitative milestone report, or failure to meet an RFP requirement, the EPA may not conduct rulemaking but instead make the determinations through correspondence directly to the State. Thus, we recommend that section 5.7.3 of District Rule 4901 be amended to refer to "EPA final determinations" rather than to "EPA final rulemaking" if the rule is amended to include the additional contingency measure triggers.

³⁴⁰ The EPA believes that the most straightforward remedy under these circumstances would be for the District to amend section 5.7.3 of Rule 4901 to extend the lower wood burning curtailment thresholds region-wide if the EPA determines that the area has failed to attain the 2012 annual PM_{2.5} NAAQS by the applicable attainment date.

Next, we considered the adequacy of the contingency measure in section 5.7.3 of District Rule 4901 from the standpoint of the magnitude of the emissions reductions the measure would provide if triggered. Neither the CAA nor the EPA's implementing regulations for the PM_{2.5} NAAQS establish a specific amount of emissions reductions that implementation of contingency measures must achieve, but the EPA has long recommended that contingency measures should provide for emissions reductions approximately equivalent to one year's worth of RFP, which in the case of the Serious area attainment plan amounts to reductions of approximately 0.5 tpd of direct PM_{2.5} and 17.3 tpd of NO_x for the 2012 annual PM_{2.5} NAAQS in the SJV.³⁴¹ As noted in our summary of the State's submission, the emissions reductions from the contingency measure in District Rule 4901 would amount to approximately 0.00 tpd to 0.387 tpd of direct PM_{2.5}, which equates to approximately 0% to 77% of one year's worth of RFP for direct PM_{2.5}. With respect to NO_x emissions reductions, the contingency measure in District Rule 4901 would amount to approximately 0.00 tpd to 0.06 tpd, which equates to approximately 0% to 0.3% of one year's worth of RFP for NO_x. As such, the emissions reductions from the contingency measure in section 5.7.3 of Rule 4901, if triggered, would be far less than one year's worth of progress with respect to the 2012 annual PM_{2.5} NAAQS in the SJV. District Rule 4901 alone, and as currently formulated, would provide insufficient emission reductions to meet the contingency measures requirement.

For these reasons, we propose to disapprove the contingency measure element of the 2018 PM_{2.5} Plan (and the related contingency measure in District Rule 4901) under CAA section 179(c)(9) and 40 CFR 51.1014 with respect to the Serious area planning requirements for the 2012 annual PM_{2.5} NAAQS in the SJV. While the contingency measure provision of the 2019 amendment to Rule 4901 has an adequate triggering mechanism for failure to attain, we propose to disapprove it because it may result in no emissions reductions if the area fails to attain the NAAQS by the

³⁴¹ The calculation of one year's worth of RFP is based on dividing the values in column E of table H-6 of Appendix H (updated February 11, 2020) of the 2018 PM_{2.5} Plan by 12, *i.e.*, the number of years between 2013 and 2025. We consider that the fact that this element focuses only on direct PM_{2.5} and NO_x (and not ammonia, SO₂, and VOC) is acceptable in light of our proposed approval of the precursor demonstration in section IV.B of this proposed rule.

applicable attainment date. Furthermore, because the contingency measure element and the contingency measure of Rule 4901 lack any to-be-triggered measure for failure to meet a quantitative milestone, failure to submit a quantitative milestone report, or failure to meet an RFP requirement, we propose that the submissions are also inadequate with respect to the RFP contingency measure requirements. Lastly, the contingency measure element, and the associated contingency measure in District Rule 4901, fail to provide emissions reductions roughly equivalent to one year's worth of progress or to provide an adequate reasoned justification why a smaller amount of emissions reductions is appropriate.³⁴²

If the EPA finalizes the proposed disapproval of the contingency measure element for the 2012 annual PM_{2.5} NAAQS and finalizes approval of the Plan's RFP demonstration, modeled attainment demonstration, and motor vehicle emissions budgets, the area would be eligible for a protective finding under the transportation conformity rule because the 2018 PM_{2.5} Plan reflects adopted control measures and contains enforceable commitments that fully satisfy the emissions reductions requirements for RFP and attainment for the 2012 annual PM_{2.5} NAAQS.³⁴³

I. Motor Vehicle Emission Budgets

1. Requirements for Motor Vehicle Emission Budgets

Section 176(c) of the CAA requires federally funded or approved 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 new violations of a NAAQS, (2) increase the frequency or 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

³⁴² 81 FR 58010, 58067. We note that the 2018 PM_{2.5} Plan includes estimates of surplus emissions reductions from already-implemented measures to support approval of the contingency measure; however, a recent Ninth Circuit decision rejected reliance on surplus emissions reductions from already-implemented measures as the basis for approving a contingency measure element that relied on a contingency measure that would provide far less than one year's worth of progress. See *Assoc. of Irrigated Residents v. EPA*, 10 F.4th 937 (9th Cir. 2021).

³⁴³ 40 CFR 93.120(a)(3).

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, the EPA, FHWA, and FTA to demonstrate that an area's regional transportation plans (RTP) and transportation improvement programs (TIP) conform to the applicable SIP. This demonstration is typically done by showing that estimated emissions from existing and planned highway and transit systems are less than or equal to the motor vehicle emissions budgets ("budgets") contained in all control strategy 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.³⁴⁴

Under the PM_{2.5} SIP Requirements Rule, Serious area PM_{2.5} attainment plans must include appropriate quantitative milestones and projected RFP emissions levels for direct PM_{2.5} and all PM_{2.5} plan precursors in each milestone year.³⁴⁵ For an area designated nonattainment for the 2012 annual PM_{2.5} NAAQS, a Serious area attainment plan that demonstrates attainment by the end of the 10th calendar year following the date of designation must contain quantitative milestones to be achieved no later than 7.5 years and 10.5 years after the date the area was designated nonattainment.³⁴⁶ Given that the SJV was designated nonattainment for the 2012 annual PM_{2.5} NAAQS effective April 15, 2015, the required Serious area milestone dates for the SJV are October 15, 2022, and October 15, 2025. Given that the 2018 PM_{2.5} Plan includes a demonstration of attainment of these NAAQS by December 31, 2025, the attainment year and the 2025 milestone year coincide.

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, SO₂, 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.³⁴⁷

In addition, 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.³⁴⁸

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) consistent with the applicability requirements of the transportation

conformity regulations (40 CFR 93.102(b)(2)(iv) and (v)).³⁴⁹

Additionally, the transportation conformity regulations contain criteria for determining whether emissions of one or more PM_{2.5} precursors are insignificant for transportation conformity purposes.³⁵⁰ 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-approved 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 emissions. The EPA's explanation for providing for insignificance determinations is described in the July 1, 2004 revision to the Transportation Conformity Rule.³⁵¹

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.³⁵² 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)).

³⁴⁴ 40 CFR 93.118(e)(4)(v).

³⁴⁵ 40 CFR 51.1012(a), 51.1013(a)(2).

³⁴⁶ 40 CFR 51.1013(a)(2)(i).

³⁴⁷ 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).

³⁴⁸ 40 CFR 93.102(b)(2)(iv).

³⁴⁹ 81 FR 58010, 58055, 58058, and 58090.

³⁵⁰ 40 CFR 93.109(f).

³⁵¹ 69 FR 40004.

³⁵² 40 CFR 93.118(f).

Summary of State's Submission

The 2018 PM_{2.5} Plan includes budgets for direct PM_{2.5} and NO_x emissions for the 2019 and 2022 RFP milestone years, the projected attainment year (2025), and one post-attainment year quantitative milestone (2028).³⁵³ The Plan establishes separate direct PM_{2.5} and NO_x subarea budgets for each county, or partial county (for Kern County), in the SJV.³⁵⁴ CARB calculated the budgets using EMFAC2014,³⁵⁵ CARB's latest version of the EMFAC model for estimating emissions from on-road vehicles operating in California that was approved by EPA at the time of Plan development, and the latest modeled vehicle miles traveled and speed distributions from the SJV MPOs from the Final 2017 Federal Transportation Improvement Plans, adopted in September 2016. The budgets reflect annual average emissions consistent with the annual averaging period of the 2012 annual PM_{2.5} NAAQS and the 2018 PM_{2.5} Plan's RFP demonstration.

The required budget years applicable to the Serious area plan portion of the 2018 PM_{2.5} Plan for the 2012 annual PM_{2.5} NAAQS are 2022 and 2025. In our previous final rule on the State's Moderate area plan for the 2012 annual PM_{2.5} NAAQS, we approved the budgets for the 2022 RFP milestone year and,

therefore, will not be acting on them again in this action.³⁵⁶ However, we include them as a reference point, given our discussion of the 2022 year in section IV.G of this proposed rule. Also, while the Plan includes budgets for 2019, consistent with our final rule on the Moderate area plan, we are not evaluating the 2019 budgets because budgets for that year would not be used in any future conformity determination because the plan contains budgets for 2022 and other years in the future, and because they are not required for the submitted Serious area plan.

Furthermore, the EPA would begin the motor vehicle emissions budget adequacy and approval review processes for the 2028 post-attainment milestone year budgets only if the area fails to attain the standard by December 31, 2025 (the applicable Serious area attainment date if the EPA were to finalize approval of the 2018 PM_{2.5} Plan's attainment demonstration). If found adequate or approved, that would result in the 2028 budgets being used in future transportation conformity determinations in any area that needed additional emissions reductions to attain the PM_{2.5} NAAQS.

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.³⁵⁷ The State did not include budgets for VOC, SO₂, or ammonia. As discussed in section IV.B of this proposed rule, the State submitted a PM_{2.5} precursor demonstration documenting that control of these precursors would not significantly contribute to attainment of the 2012 annual PM_{2.5} NAAQS, and the EPA is proposing to approve the precursor demonstration. Therefore, if the EPA approves the demonstration, consistent with the transportation conformity regulation (40 CFR 93.102(b)(2)(v)), the State would not be required to submit budgets for these precursors. The State also included a discussion of the significance/ insignificance factors for ammonia, SO₂, and VOC, which would demonstrate a finding of insignificance under the transportation conformity rule.³⁵⁸ 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.³⁵⁹ The budgets included in the 2018 PM_{2.5} Plan are shown in Table 9 of this proposed rule.

TABLE 9—MOTOR VEHICLE EMISSION BUDGETS FOR THE SAN JOAQUIN VALLEY FOR THE 2012 PM_{2.5} STANDARD
[Annual average, tpd]

County	2022 (RFP year) ^a		2025 (attainment year)	
	PM _{2.5}	NO _x	PM _{2.5}	NO _x
Fresno	0.9	21.2	0.8	14.3
Kern	0.8	19.4	0.8	12.8
Kings	0.2	4.1	0.2	2.7
Madera	0.2	3.5	0.2	2.3
Merced	0.3	7.6	0.3	5.0
San Joaquin	0.6	10.0	0.6	6.9
Stanislaus	0.4	8.1	0.4	5.6
Tulare	0.4	6.9	0.4	4.7

Source: 2018 PM_{2.5} Plan, Appendix D, Table 3–3. Budgets are rounded to the nearest tenth of a ton.

^a The EPA has already approved the 2022 RFP budgets in our final rule on the State's Moderate area plan for the 2012 annual PM_{2.5} NAAQS in the SJV.

In the submittal letter for the 2018 PM_{2.5} Plan, CARB requested that the EPA limit the duration of the approval of the budgets to the period before the effective date of the EPA's adequacy

finding for any subsequently submitted budgets.³⁶⁰

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. In the 2018 PM_{2.5} Plan, the approximate weighting ratios of the precursor emissions for annual average PM_{2.5} formation in equivalent tons per

³⁵³ 2018 PM_{2.5} Plan, App. D, Table 3–3.

³⁵⁴ 40 CFR 93.124(c) and (d).

³⁵⁵ EMFAC is short for EMISSION FACTOR. 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**.

³⁵⁶ 86 FR 67343, 67346.

³⁵⁷ 2018 PM_{2.5} Plan, App. D, D–122 to D–123.

³⁵⁸ 40 CFR 93.109(f).

³⁵⁹ 2018 PM_{2.5} Plan, App. D, D–121 and D–122.

³⁶⁰ Letter dated May 9, 2019, from Richard W. Corey, Executive Officer, CARB to Mike Stoker, Regional Administrator, EPA Region IX, 3.

day of NO_x are: 6.5:1 (*i.e.*, reducing 6.5 tons of NO_x is equivalent to reducing one ton of PM_{2.5}). 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 SJV to meet the NO_x budget, the NO_x emission reductions available to supplement the PM_{2.5} budget would only be those remaining after the NO_x budget has been met.³⁶¹ The Plan also provides that the SJV 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.

EPA 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 budgets 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, SO₂, and VOCs do not contribute significantly to PM_{2.5} levels that exceed the 2012 annual PM_{2.5} NAAQS in the SJV, as discussed in section IV.B of this preamble, and the information about ammonia, SO₂, 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, SO₂, and VOC to attain the 2012 annual PM_{2.5} NAAQS in the SJV.³⁶² 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 2012 annual PM_{2.5} NAAQS in the SJV.

For the reasons discussed in sections IV.G and IV.F of this proposed rule, the

EPA is proposing to approve the RFP and attainment demonstrations, respectively, in the 2018 PM_{2.5} Plan. The 2025 budgets for RFP and attainment, as shown in Table 9 of this proposed rule, are consistent with these demonstrations, are clearly identified and precisely quantified, and meet all other applicable statutory and regulatory requirements including the adequacy criteria in 40 CFR 93.118(e)(4) and (5). For these reasons, the EPA proposes to approve the 2025 budgets listed in Table 9. We provide a more detailed discussion in section VI of the EPA's 2012 Annual PM_{2.5} TSD.

As discussed in section IV.I.2 of this proposed rule, we have already approved the 2022 RFP budgets for the SJV as part of our final rule on the State's Moderate area plan for the 2012 annual PM_{2.5} NAAQS, as supplemented by the 2018 PM_{2.5} Plan. The budgets that the EPA is proposing to approve relate to the 2012 annual PM_{2.5} NAAQS only, and our proposed approval does not affect the status of the previously-approved budgets for the 1997 PM_{2.5} NAAQS and related trading mechanism, which remain in effect for that PM_{2.5} NAAQS, nor the 2006 24-hour PM_{2.5} NAAQS and related trading mechanism, which remain in effect for that PM_{2.5} NAAQS.³⁶³

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 6.5:1 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 SJV 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.

³⁶³ 76 FR 69896, 69923–69924 (final rule approving direct PM_{2.5} and NO_x budgets for 2012 and 2014 for the 1997 annual and 24-hour PM_{2.5} NAAQS); and 85 FR 44192, 44204 (final rule approving direct PM_{2.5} and NO_x budgets for 2020, 2023, and 2024 for the 2006 24-hour PM_{2.5} NAAQS). The EPA has also proposed to approve budgets from the 2018 PM_{2.5} Plan for direct PM_{2.5} and NO_x for 2017 and 2020 for the 1997 24-hour PM_{2.5} NAAQS. 86 FR 53150, 53176–53179.

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 concludes that it is appropriate for transportation conformity purposes in the SJV for the 2012 annual 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} NAAQS³⁶⁴ and the 2012 PM_{2.5} Plan for the 2006 24-hour PM_{2.5} NAAQS.³⁶⁵ 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 inter-pollutant 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 SJV 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 annual concentrations showed NO_x:PM_{2.5} ratios that range from a high of 7.1 at the Bakersfield-California Avenue monitor to a low of 6.0 at the two Fresno monitors.³⁶⁶ We consider that the State's approach is a reasonable method to use to develop ratios for transportation conformity purposes. We therefore propose to approve the 6.5:1 NO_x for PM_{2.5} trading mechanism as enforceable components of the transportation conformity program for the SJV for the 2012 annual 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. As a general matter, such approved budgets cannot be superseded

³⁶⁴ 80 FR 1816, 1841 (January 13, 2015) (noting the EPA's prior approval of motor vehicle emissions budgets for the 1997 annual and 24-hour PM_{2.5} standards in the 2008 PM_{2.5} Plan at 76 FR 69896).

³⁶⁵ 81 FR 59876 (August 31, 2016).

³⁶⁶ 2018 PM_{2.5} Plan, App. D, D–126.

³⁶¹ 2018 PM_{2.5} Plan, App. D, D–126 and D–127.

³⁶² 40 CFR 93.102(b)(2)(v).

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.³⁶⁷

In the submittal letter for the 2018 PM_{2.5} Plan, CARB requested that we limit the duration of our approval of the budgets to the period before the effective date of the EPA's adequacy finding for any subsequently submitted budgets.³⁶⁸ However, CARB recently clarified that since they have submitted EMFAC2021 for EPA review, they no longer request that we limit the duration of our approval.³⁶⁹

Lastly, in section IV.H of this proposed rule, the EPA is proposing to disapprove the contingency measure element of the 2018 PM_{2.5} Plan with respect to the Serious area requirements for the 2012 annual PM_{2.5} NAAQS. If the EPA were to finalize the proposed disapproval of the 2012 annual PM_{2.5} NAAQS Serious area contingency measure element, the area would be eligible for a protective finding under the transportation conformity rule because the 2018 PM_{2.5} Plan reflects adopted control measures that fully satisfy the emissions reductions requirements for the RFP and attainment year of 2025.³⁷⁰

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 2012 annual PM_{2.5} NAAQS to address the CAA's Serious area planning requirements in the SJV nonattainment area:

1. The 2013 base year emission inventories (CAA section 172(c)(3) and 40 CFR 51.1008(b));
2. 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) and 40 CFR 51.1010(a));
3. the demonstration (including air quality modeling) that the Plan provides

for attainment as expeditiously as practicable but no later than December 31, 2025 (CAA sections 189(b)(1)(A) and 40 CFR 51.1011(b));

4. plan provisions that require RFP toward attainment by the applicable date (CAA section 172(c)(2) and 40 CFR 51.1012(a));

5. 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) and 40 CFR 51.1013(a)(2)(i));

6. motor vehicle emissions budgets for 2025 as shown in Table 9 of this proposed rule (CAA section 176(c) and 40 CFR part 93, subpart A); and

7. the inter-pollutant trading mechanism provided for use in transportation conformity analyses for the 2012 annual PM_{2.5} NAAQS, in accordance with 40 CFR 93.124(b).

We may, however, reconsider this proposal if, based on new information or public comments, we find that the State has not satisfied the statutory criteria for Serious area PM_{2.5} plans.

Pursuant to CAA section 110(k)(3), the EPA proposes to disapprove the contingency measure element of the 2018 PM_{2.5} Plan for the 2012 annual PM_{2.5} NAAQS, as implemented by section 5.7.3 of District Rule 4901, under CAA section 179(c)(9) and 40 CFR 51.1014. Among other reasons, the element includes no specific measures to be undertaken if the state fails to submit a quantitative milestone report for the area, or if the area fails to meet RFP or a quantitative milestone. In addition, the element includes a specific measure (section 5.7.3 of District Rule 4901) that may not result in any emissions reductions following a failure to attain the 2012 annual PM_{2.5} NAAQS by the applicable attainment date under certain circumstances.

If we finalize the disapproval of the contingency measure element as proposed, the offset sanction in CAA section 179(b)(2) would apply in the SJV 18 months after the effective date of a final disapproval, and the highway funding sanctions in CAA section 179(b)(1) would apply in the area six months after the offset sanction is imposed.³⁷¹ Neither sanction will be imposed under the CAA if the State submits and we approve, prior to the implementation of the sanctions, a SIP revision that corrects the deficiencies that we identify in our final action. The EPA intends to work with CARB and the

SJVUAPCD to correct the deficiencies in a timely manner.

In addition to the sanctions, CAA section 110(c)(1) provides that the EPA must promulgate a federal implementation plan (FIP) addressing any disapproved elements of an attainment plan two years after the effective date of disapproval unless the State submits, and the EPA approves, a SIP submission that cures the disapproved elements.

Also, we previously approved the Serious area plan RFP and attainment demonstrations and the motor vehicle emissions budgets for the 2006 24-hour PM_{2.5} NAAQS³⁷² and the Moderate area plan RACM, additional reasonable measures, and RFP demonstrations.³⁷³ In this proposed rule, we are proposing to approve the Serious area plan BACM/BACT, RFP, and attainment demonstrations, and motor vehicle emission budgets for the 2012 annual PM_{2.5} NAAQS. Because of those actions, we are proposing to issue a protective finding under 40 CFR 93.120(a)(3) to the disapproval of the contingency measure element.

Without a protective finding, the final disapprovals would result in a conformity freeze, under which only projects in the first four years of the most recent conforming Regional Transportation Plans (RTPs) and Transportation Improvement Programs (TIPs) can proceed. Generally, during a freeze, no new RTPs, TIPs, or RTP/TIP amendments can be found to conform until another control strategy implementation plan revision fulfilling the same CAA requirements is submitted, the EPA finds its motor vehicle emissions budget(s) adequate pursuant to § 93.118 or approves the submission, and conformity to the implementation plan revision is determined.³⁷⁴ Under a protective finding, the final disapproval of the contingency measure elements would not result in a transportation conformity freeze in the SJV PM_{2.5} nonattainment area and the MPOs may continue to make transportation conformity determinations.

We will accept comments from the public on these proposals for the next 30 days. The deadline and instructions for submission of comments are provided in the **DATES** and **ADDRESSES** sections at the beginning of this proposed rule.

³⁷² 85 FR 44192.

³⁷³ 86 FR 67343, 67346.

³⁷⁴ 40 CFR 93.120(a)(2).

³⁶⁷ 40 CFR 93.118(e)(1).

³⁶⁸ Letter dated May 9, 2019, from Richard W. Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region IX, 3.

³⁶⁹ Email dated November 30, 2021, from Nesamani Kalandiyur, Manager, Transportation Analysis Section, Sustainable Transportation and Communities Division, CARB, to Karina O'Connor, Air Planning Office, EPA Region IX.

³⁷⁰ 40 CFR 93.120(a)(3).

³⁷¹ 40 CFR 52.31.

VI. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at <https://www.epa.gov/laws-regulations/laws-and-executive-orders>.

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is not a significant regulatory action and was therefore not submitted to the Office of Management and Budget (OMB) for review.

B. Paperwork Reduction Act (PRA)

This action does not impose an information collection burden under the PRA because this action does not impose additional requirements beyond those imposed by state law.

C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. This action will not impose any requirements on small entities beyond those imposed by state law.

D. Unfunded Mandates Reform Act (UMRA)

This action does not contain any unfunded mandate as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. This action does not impose additional requirements beyond those imposed by state law. Accordingly, no additional costs to state, local, or tribal governments, or to

the private sector, will result from this action.

E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

F. Executive Order 13175: Coordination With Indian Tribal Governments

This action does not have tribal implications, as specified in Executive Order 13175, because the SIP is not approved to apply on any Indian reservation land or in any other area where the EPA or an Indian tribe has demonstrated that a tribe has jurisdiction, and will not impose substantial direct costs on tribal governments or preempt tribal law. Thus, Executive Order 13175 does not apply to this action.

G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of “covered regulatory action” in section 2–202 of the Executive Order. This action is not subject to Executive Order 13045 because it does not impose additional requirements beyond those imposed by state law.

H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

This action is not subject to Executive Order 13211, because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act (NTTAA)

Section 12(d) of the NTTAA directs the EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. The EPA believes that this action is not subject to the requirements of section 12(d) of the NTTAA because application of those requirements would be inconsistent with the CAA.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Population

The EPA lacks the discretionary authority to address environmental justice in this rulemaking.

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Ammonia, Incorporation by reference, Intergovernmental relations, Nitrogen dioxide, Particulate matter, Reporting and recordkeeping requirements, Sulfur dioxide, Volatile organic compounds.

Authority: 42 U.S.C. 7401 *et seq.*

Dated: December 16, 2021.

Deborah Jordan,

Acting Regional Administrator, Region IX.

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