

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA-R09-OAR-2021-0261; FRL-8969-01-R9]

Partial Approval and Partial Disapproval of Air Quality Implementation Plans and Determination of Attainment by the Attainment Date; California; San Joaquin Valley Serious Area and Section 189(d) Plan for Attainment of the 1997 24-Hour PM_{2.5} NAAQS

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA) is proposing to approve in part and disapprove in part portions of a state implementation plan (SIP) revision submitted by the State of California to meet Clean Air Act (CAA or “Act”) requirements for the 1997 24-hour fine particulate matter (PM_{2.5}) national ambient air quality standards (NAAQS) in the San Joaquin Valley nonattainment area. Specifically, the EPA is proposing to approve all but the contingency measure element of the submitted SIP revision as meeting all applicable Serious area and CAA section 189(d) requirements for the 1997 24-hour PM_{2.5} NAAQS and is proposing disapproval of the contingency measure element. The EPA is also proposing to determine that the San Joaquin Valley air quality planning area has attained the 1997 24-hour PM_{2.5} NAAQS. This determination is based on sufficient, quality-assured, and certified data for 2018–2020. Based on our proposed finding that the San Joaquin Valley nonattainment area has attained the 1997 24-hour PM_{2.5} NAAQS, we are proposing to determine that the requirement for contingency measures will no longer apply to the San Joaquin Valley nonattainment area for these NAAQS. Thus, the EPA is proposing to issue a protective finding for transportation conformity determinations for this proposed disapproval.

DATES: Any comments on this proposal must be received by October 25, 2021.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA-R09-OAR-2021-0261 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 (e.g., audio or video) 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>. If you need assistance in a language other than English or if you are a person with disabilities who needs a reasonable accommodation at no cost to you, please contact the person identified in the **FOR FURTHER INFORMATION CONTACT** section.

FOR FURTHER INFORMATION CONTACT: Ashley Graham, Air Planning Office (ARD-2), EPA Region IX, 75 Hawthorne Street, San Francisco, CA 94105, (415) 972-3877, or by email at graham.ashleyr@epa.gov.

SUPPLEMENTARY INFORMATION: Throughout this document, “we,” “us,” or “our” refer to the EPA.

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I. Background for Proposed Action

A. PM_{2.5} NAAQS

Under section 109 of the CAA, the EPA has established NAAQS for certain pervasive air pollutants (referred to as “criteria pollutants”) and conducts periodic reviews of the NAAQS to determine whether they should be revised or whether new NAAQS should be established.

On July 18, 1997, the EPA revised the NAAQS for particulate matter by establishing new NAAQS for particles with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers (PM_{2.5}).¹ The EPA established primary and secondary annual and 24-hour standards for PM_{2.5}.² The annual primary and secondary standards were set at 15.0 micrograms per cubic meter (µg/m³), based on a three-year average of annual mean PM_{2.5} concentrations, and the 24-hour primary and secondary standards were set at 65 µg/m³, based on the three-year average of the 98th percentile of 24-hour PM_{2.5} concentrations at each monitoring site within an area.³ Collectively, we refer herein to the 1997 24-hour and annual PM_{2.5} NAAQS as the “1997 PM_{2.5} NAAQS” or “1997 PM_{2.5} standards.”

On October 17, 2006, the EPA revised the level of the 24-hour PM_{2.5} NAAQS to 35 µg/m³,⁴ and on January 15, 2013, the EPA revised the level of the primary annual PM_{2.5} NAAQS to 12.0 µg/m³.⁵ Even though the EPA lowered the 24-hour and annual PM_{2.5} NAAQS, the 1997 24-hour PM_{2.5} NAAQS remain in effect and the 1997 primary annual PM_{2.5} NAAQS remains in effect in areas designated nonattainment for that NAAQS.⁶

The EPA established the 1997 PM_{2.5} NAAQS after considering substantial

¹ 62 FR 38652.

² For a given air pollutant, “primary” NAAQS are those determined by the EPA as requisite to protect the public health, allowing an adequate margin of safety, and “secondary” standards are those determined by the EPA as requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air. See CAA section 109(b).

³ 40 CFR 50.7.

⁴ 71 FR 61144.

⁵ 78 FR 3086.

⁶ 40 CFR 50.13(d).

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 dates), changes in lung function and increased respiratory symptoms, and new evidence for more subtle indicators of cardiovascular health. Individuals particularly sensitive to PM_{2.5} exposure include older adults, people with heart and lung disease, and children.⁷

Sources can emit PM_{2.5} directly into the atmosphere as a solid or liquid particle (primary PM_{2.5} or direct PM_{2.5}), or PM_{2.5} can form in the atmosphere (secondary PM_{2.5}) as a result of various chemical reactions from precursor emissions of nitrogen oxides (NO_x), sulfur oxides (SO_x), volatile organic compounds, and ammonia.⁸

B. San Joaquin Valley PM_{2.5} Designations, Classifications, and SIP Revisions

Following promulgation of a new or revised NAAQS, the EPA is required under CAA section 107(d) to designate areas throughout the nation as attaining or not attaining the NAAQS. Effective April 5, 2005, the EPA established the initial air quality designations for the 1997 24-hour and annual PM_{2.5} NAAQS, using air quality monitoring data for the three-year periods of 2001–2003 and 2002–2004.⁹ The EPA designated the San Joaquin Valley as nonattainment for both the 1997 24-hour PM_{2.5} NAAQS (65 µg/m³) and the 1997 annual PM_{2.5} NAAQS (15.0 µg/m³).¹⁰

The San Joaquin Valley PM_{2.5} nonattainment area encompasses over 23,000 square miles and includes all or part of eight counties: San Joaquin, Stanislaus, Merced, Madera, Fresno, Tulare, Kings, and the valley portion of Kern.¹¹ The area is home to four million people and is one of the nation's leading agricultural regions. 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. Under State law, the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD or “District”) has primary responsibility for developing plans to provide for attainment of the NAAQS in this area. The District works cooperatively with the California Air Resources Board (CARB) in preparing attainment plans. Authority for regulating sources under state jurisdiction in the San Joaquin Valley is split under State law between the District, which generally has responsibility for regulating stationary and area sources, and CARB, which generally has responsibility for regulating mobile sources.

At the time of the initial designations for the 1997 PM_{2.5} NAAQS, the EPA interpreted the CAA to require implementation of the NAAQS under the general nonattainment plan requirements of subpart 1.¹² Under subpart 1, states were required to submit nonattainment plan SIP submissions within three years of the effective date of designations, that, among other things, provided for implementation of reasonably available control measures (RACM), reasonable further progress (RFP), contingency measures, and a modeled attainment demonstration showing attainment of the NAAQS as expeditiously as practicable but no later than five years from the designation (in this instance, no later than April 5, 2010) unless the state justified an attainment date extension of up to five years.¹³

Between 2007 and 2011, California submitted six SIP revisions to address nonattainment area planning requirements for the 1997 24-hour and annual PM_{2.5} NAAQS in the San Joaquin Valley,¹⁴ which we refer to collectively as the “2008 PM_{2.5} Plan.” On November 9, 2011, the EPA approved the portions of the 2008 PM_{2.5} Plan, as revised in 2009 and 2011, that addressed attainment of the 1997 24-hour and annual PM_{2.5} NAAQS in the San Joaquin Valley PM_{2.5} nonattainment area, except for the attainment contingency measures, which we disapproved.¹⁵ We also granted the State's request to extend the attainment deadline for the

1997 PM_{2.5} NAAQS in the San Joaquin Valley to April 5, 2015.¹⁶

Following a January 4, 2013 decision of the U.S. Court of Appeals for the D.C. Circuit (“D.C. Circuit”) remanding the EPA's 2007 implementation rule for the 1997 PM_{2.5} NAAQS,¹⁷ the EPA published a final rule on June 2, 2014, classifying the San Joaquin Valley as a Moderate nonattainment area for the 1997 24-hour and annual PM_{2.5} NAAQS under subpart 4, part D of title I of the Act.¹⁸ In this action, the EPA acknowledged that states must meet both subpart 1 and subpart 4 requirements in nonattainment plan SIP submissions for the 1997 24-hour and annual PM_{2.5} NAAQS and provided states with additional time to supplement or withdraw and resubmit any pending nonattainment plan SIP submissions.

Effective May 7, 2015, the EPA reclassified the San Joaquin Valley as a Serious nonattainment area for the 1997 PM_{2.5} NAAQS based on the determination that the State could not practicably attain these NAAQS in the San Joaquin Valley nonattainment area by the latest statutory Moderate area attainment date, *i.e.*, April 5, 2015.¹⁹ Upon reclassification as a Serious area, the State became subject to the requirement of CAA section 188(c)(2) to attain the 1997 PM_{2.5} NAAQS, as expeditiously as practicable but no later than ten years after designation, *i.e.*, by no later than December 31, 2015. California submitted its 1997 PM_{2.5} Serious area plan for the San Joaquin Valley in two submissions dated June 25, 2015 and August 13, 2015, including a request under section 188(e) to extend the attainment date for the 1997 24-hour PM_{2.5} NAAQS by three years (to December 31, 2018) and to extend the attainment date for the 1997 annual PM_{2.5} NAAQS by five years (to December 31, 2020). On February 9, 2016, the EPA proposed to approve most of the Serious area plan and to

¹⁶ *Id.*

¹⁷ *Natural Resources Defense Council v. EPA*, 706 F.3d 428 (D.C. Cir. 2013) (“*NRDC*”). In *NRDC*, the court held that the EPA erred in implementing the 1997 PM_{2.5} standards solely pursuant to the general implementation requirements of subpart 1, without also considering the requirements specific to nonattainment areas for particles less than or equal to 10 µm in diameter (PM₁₀) in subpart 4, part D of title I of the CAA. The court reasoned that the plain meaning of the CAA requires implementation of the 1997 PM_{2.5} standards under subpart 4 because PM_{2.5} falls within the statutory definition of PM₁₀ and is thus subject to the same statutory requirements as PM₁₀. The court remanded the rule, without vacatur, and instructed the EPA “to repromulgate these rules pursuant to Subpart 4 consistent with this opinion.”

¹⁸ 79 FR 31566.

¹⁹ 80 FR 18528 (April 7, 2015).

⁷ EPA, Air Quality Criteria for Particulate Matter, No. EPA/600/P-99/002aF and EPA/600/P-99/002bF, October 2004.

⁸ For example, see 72 FR 20586, 20589 (April 25, 2007).

⁹ 70 FR 944 (January 5, 2005).

¹⁰ 40 CFR 81.305.

¹¹ For a precise description of the geographic boundaries of the San Joaquin Valley nonattainment area, see 40 CFR 81.305.

¹² 72 FR 20586.

¹³ CAA sections 172(a)(2), 172(c)(1), 172(c)(2), and 172(c)(9).

¹⁴ 76 FR 69896, n. 2 (November 9, 2011).

¹⁵ *Id.* at 69924.

grant the State's request for extensions of the December 31, 2015 attainment date.²⁰ However, on October 6, 2016, after considering public comments, the EPA denied California's request for these extensions of the attainment dates.²¹ Consequently, on November 23, 2016, the EPA determined that the San Joaquin Valley had failed to attain the 1997 24-hour and annual PM_{2.5} NAAQS by the December 31, 2015 Serious area attainment date.²² This determination triggered a requirement for California to submit a new SIP submission for the 1997 24-hour and annual PM_{2.5} NAAQS for the San Joaquin Valley that satisfies the requirements of CAA section 189(d). The statutory deadline for this additional SIP submission was December 31, 2016. The EPA did not finalize the actions proposed on February 9, 2016, with respect to the submitted Serious area plan.²³

On December 6, 2018, the EPA determined that California had failed to submit a complete section 189(d) attainment plan for the 1997 24-hour and annual PM_{2.5} NAAQS, among other required SIP submissions for the San Joaquin Valley, by the statutory deadlines.²⁴ This finding, which became effective on January 7, 2019, triggered clocks under CAA section 179(a) for the application of emissions offset sanctions 18 months after the finding, and highway funding sanctions 6 months thereafter, unless the EPA affirmatively determined that the State has made a complete SIP submission addressing the identified failure to submit deficiencies.²⁵ The finding also triggered the obligation under CAA section 110(c) for the EPA to promulgate a federal implementation plan no later than two years after the finding, unless the State has submitted, and the EPA has approved, the required SIP submission.²⁶

On May 10, 2019, CARB made SIP submissions intended to address the Serious area nonattainment plan and CAA section 189(d) requirements for the 1997 24-hour and annual PM_{2.5} NAAQS, among other requirements for the 2006 and 2012 PM_{2.5} NAAQS.²⁷ CARB

clarified in its May 10, 2019 letter that these new SIP submissions superseded past submissions to the EPA that the agency had not yet acted on for the 1997 PM_{2.5} NAAQS, including the 2015 Serious area attainment plan submissions. On June 24, 2020, the EPA issued a letter finding these submissions complete and terminating the sanctions clocks under CAA section 179(a).²⁸ The portions of these SIP submissions that pertain to the 1997 24-hour PM_{2.5} NAAQS are the subject of this proposal.

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

The EPA is proposing action on portions of two SIP submissions made by CARB to address nonattainment plan requirements for the 1997 24-hour PM_{2.5} NAAQS in the San Joaquin Valley. Specifically, the EPA is proposing to act on those portions of the following two SIP submissions that pertain to the 1997 24-hour PM_{2.5} NAAQS: (i) 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");²⁹ and (ii) 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"). CARB submitted the 2018 PM_{2.5} Plan and Valley State SIP Strategy to the EPA as a revision to the California SIP on May 10, 2019.³⁰ We refer to these two SIP

that the 2018 PM_{2.5} Plan supersedes past submittals to the EPA that the agency has not yet acted on for the 1997 PM_{2.5} standards, including the 2015 Plan for the 1997 Standard (submitted by CARB on June 25, 2015) and motor vehicle emission budgets (submitted by CARB August 13, 2015).

²⁸ Letter dated June 24, 2020, from Elizabeth J. Adams, Director, Air and Radiation Division, EPA Region IX, to Richard Corey, Executive Officer, CARB, Subject: "RE: Completeness Finding for State Implementation Plan (SIP) Submissions for San Joaquin Valley for the 1997, 2006, and 2012 Fine Particulate Matter (PM_{2.5}) National Ambient Air Quality Standards (NAAQS) and Termination of Clean Air Act (CAA) Sanction Clocks."

²⁹ The 2018 PM_{2.5} Plan was developed jointly by CARB and the District.

³⁰ Letter dated May 9, 2019, from Richard Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region 9. The EPA previously acted on those portions of the "2018 Plan for the 1997, 2006, and 2012 PM_{2.5} Standards" and the "San Joaquin Valley Supplement to the 2016 State Strategy for the State Implementation Plan" that pertain to the 2006 PM_{2.5} NAAQS (85 FR 44192, July 22, 2020), and proposed action on those portions pertaining to the 1997 annual PM_{2.5} NAAQS (86 FR 38652, July 22, 2021) and 2012 annual PM_{2.5} NAAQS (86 FR 49100, September 1, 2021). The EPA is not, at this time, taking any action on those portions that pertain to the 1997 annual PM_{2.5} NAAQS or the 2012 annual PM_{2.5} NAAQS. We intend to act on these portions of the submitted SIP revisions in subsequent rulemakings.

submissions collectively as the "SJV PM_{2.5} Plan" or "Plan."

The SJV PM_{2.5} Plan addresses the Serious area nonattainment plan and CAA section 189(d) requirements for the 1997 24-hour and annual PM_{2.5} NAAQS in the San Joaquin Valley, including the State's demonstration that the area would attain the 1997 24-hour PM_{2.5} NAAQS by December 31, 2020. In this proposal, the EPA is proposing action only on those portions of the SJV PM_{2.5} Plan that pertain to the 1997 24-hour PM_{2.5} NAAQS. The EPA is acting on the portions of the SJV PM_{2.5} Plan that pertain to the 1997 annual PM_{2.5} NAAQS and subsequent PM_{2.5} NAAQS in separate rulemakings.

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 must include evidence that the state provided adequate public notice and an opportunity for a public hearing consistent with the EPA's implementing regulations in 40 CFR 51.102.

CAA section 110(k)(1)(B) requires the EPA to determine whether a SIP submission is complete within 60 days of receipt. This section also provides that any plan that the EPA has not affirmatively determined to be complete or incomplete will become complete by operation of law six months after the date of submission. The EPA's SIP completeness criteria are found in 40 CFR part 51, Appendix V.

A. 2018 PM_{2.5} Plan

The following portions of the 2018 PM_{2.5} Plan and related support documents address both the Serious area nonattainment plan requirements in CAA section 189(b) and the CAA section 189(d) requirements for the 1997 24-hour PM_{2.5} NAAQS in the San Joaquin Valley: (i) Chapter 4 ("Attainment Strategy for PM_{2.5}"); (ii) Chapter 5 ("Demonstration of Federal Requirements for 1997 PM_{2.5} Standards");³¹ (iii) numerous appendices to the 2018 PM_{2.5} Plan; (iv)

³¹ Chapter 6 ("Demonstration of Federal Requirements for the 2006 PM_{2.5} Standard: Serious Plan and Extension Request") and Chapter 7 ("Demonstration of Federal Requirements for the 2012 PM_{2.5} Standard") of the 2018 PM_{2.5} Plan pertain to the 2006 PM_{2.5} NAAQS and the 2012 PM_{2.5} NAAQS, respectively. The EPA previously acted on those portions of the Plan that pertain to the 2006 PM_{2.5} NAAQS (85 FR 44192), and proposed action on those portions pertaining to the 2012 annual PM_{2.5} NAAQS (86 FR 49100). The EPA intends to take further action on those portions that pertain to the 2012 annual PM_{2.5} NAAQS in separate rulemakings.

²⁰ 81 FR 6936. California's request for extension of the Serious Area attainment date for the San Joaquin Valley accompanied its Serious Area attainment plan for the 1997 PM_{2.5} NAAQS and related motor vehicle emission budgets, submitted June 25, 2015 and August 13, 2015, respectively.

²¹ 81 FR 69396.

²² 81 FR 84481.

²³ 81 FR 69396, 69400.

²⁴ 83 FR 62720.

²⁵ Id. at 62723.

²⁶ Id.

²⁷ Letter dated May 9, 2019, from Richard Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region 9. The letter clarifies

CARB's "Staff Report, Review of the San Joaquin Valley 2018 Plan for the 1997, 2006, and 2012 PM_{2.5} Standards," release date December 21, 2018 ("CARB Staff Report");³² 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).³³

The appendices to the 2018 PM_{2.5} Plan that address the requirements for the 1997 24-hour PM_{2.5} NAAQS include: (i) Appendix A ("Ambient PM_{2.5} Data Analysis"); (ii) Appendix B ("Emissions Inventory"); (iii) Appendix C ("Stationary Source Control Measure Analyses"); (iv) Appendix D ("Mobile Source Control Measure Analyses"); (v) Appendix G ("Precursor Demonstration"); (vi) Appendix H ("RFP, Quantitative Milestones, and Contingency");³⁴ (vii) Appendix I ("New Source Review and Emission Reduction Credits"); (viii) Appendix J ("Modeling Emission Inventory"); (ix) Appendix K ("Modeling Attainment Demonstration"); and (x) Appendix L ("Modeling Protocol").

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.³⁵ CARB also provided public notice and opportunity for public comment prior to its January 24, 2019 public hearing on and adoption of the 2018 PM_{2.5} Plan.³⁶ 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

³² Letter dated December 11, 2019, from Richard Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region 9, transmitting the CARB Staff Report [on the 2018 PM_{2.5} Plan]. The CARB Staff Report includes CARB's review of, among other things, the 2018 PM_{2.5} Plan's control strategy and attainment demonstration.

³³ 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.

³⁴ Appendix H to 2018 PM_{2.5} Plan, submitted February 11, 2020 via the EPA State Planning Electronic Collaboration System. Following the identification of a transcription error in the RFP tables of Appendix H, on February 11, 2020, the State submitted a revised version of Appendix H that corrects the transcription error and provides additional information on the RFP demonstration. All references to Appendix H in this proposed rule are to the revised version submitted on February 11, 2020, which replaces the version submitted with the 2018 PM_{2.5} Plan on May 10, 2019.

³⁵ SJVUAPCD, "Notice of Public Hearing for Adoption of Proposed 2018 PM_{2.5} Plan for the 1997, 2006, and 2012 Standards," October 16, 2018, and SJVUAPCD Governing Board Resolution 18–11–16.

³⁶ 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.

and District's public review processes and the agencies' responses thereto.³⁷ Therefore, we find that the 2018 PM_{2.5} Plan meets the procedural requirements for public notice and hearing in CAA sections 110(a) and 110(l) and 40 CFR 51.102. The 2018 PM_{2.5} Plan became complete by operation of law on November 10, 2019.

B. Valley State SIP Strategy

CARB developed the "Revised Proposed 2016 State Strategy for the State Implementation Plan" ("2016 State Strategy") to support attainment planning in the San Joaquin Valley and Los Angeles-South Coast Air Basin ("South Coast") ozone nonattainment areas.³⁸ 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 emissions reductions and 0.1 tpd of direct PM_{2.5} emissions reductions in the San Joaquin Valley by 2025 and directed CARB staff to work with the SJVUAPCD to identify additional reductions from sources under District regulatory authority as part of a comprehensive plan to attain all of the PM_{2.5} NAAQS in the San Joaquin Valley and to return to the Board with a commitment to achieve additional emissions reductions from mobile sources.³⁹

CARB responded to this resolution by developing and adopting the "San Joaquin Valley Supplement to the 2016 State Strategy for the State Implementation Plan" ("Valley State SIP Strategy") to support the 2018 PM_{2.5} Plan. The State's May 10, 2019 SIP submission incorporates by reference the Valley State SIP Strategy as adopted by CARB on October 25, 2018 and submitted to the EPA on November 16, 2018.⁴⁰

The Valley State SIP Strategy includes an "Introduction" (Chapter 1), a chapter on "Measures" (Chapter 2), and a "Supplemental State Commitment from

³⁷ 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, Appendix M ("Summary of Significant Comments and Responses").

³⁸ The EPA has approved certain commitments made by CARB in the 2016 State Strategy for purposes of attaining the ozone NAAQS in the San Joaquin Valley and South Coast ozone nonattainment areas (see, e.g., 84 FR 3302 (February 12, 2019) and 84 FR 52005 (October 1, 2019)) and for attaining the 2006 PM_{2.5} NAAQS in the San Joaquin Valley (85 FR 44192).

³⁹ CARB Resolution 17–7, "2016 State Strategy for the State Implementation Plan," March 23, 2017, 6–7.

⁴⁰ Letter dated May 9, 2019, from Richard Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region 9.

the Proposed State Measures for the Valley" (Chapter 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.⁴¹ 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} emissions reductions by specific years, for purposes of attaining the PM_{2.5} NAAQS in the San Joaquin Valley.⁴²

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.⁴³ 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.⁴⁴ Therefore, we find that the Valley State SIP Strategy meets the procedural requirements for public notice and hearing in CAA sections 110(a) and 110(l) and 40 CFR 51.102. The Valley State SIP Strategy became complete by operation of law on November 10, 2019.

III. Clean Air Act Requirements for PM_{2.5} Serious Area Plans and for Serious PM_{2.5} Areas That Fail To Attain

A. Requirements for PM_{2.5} Serious Area Plans

Upon reclassification of a Moderate nonattainment area as a Serious nonattainment area under subpart 4 of part D, title I of the CAA, the Act requires the state to make a SIP submission that addresses the following Serious nonattainment area requirements:⁴⁵

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));

⁴¹ 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.

⁴² CARB Resolution 18–49, "San Joaquin Valley Supplement to the 2016 State Strategy for the State Implementation Plan," October 25, 2018, 5.

⁴³ 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.

⁴⁴ 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).

⁴⁵ 40 CFR 51.1003(b)(1); 81 FR 58010, 58074–58075 (August 24, 2016).

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

3. A demonstration (including air quality modeling) that the plan provides for attainment as expeditiously as practicable but no later than the end of the tenth calendar year after designation as a nonattainment area (*i.e.*, December 31, 2015, for the San Joaquin Valley for the 1997 PM_{2.5} NAAQS);

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

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 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));⁴⁶

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"⁴⁷ thresholds from 100 tons per year (tpy) to 70 tpy (CAA section 189(b)(3)).

Serious area plans must also satisfy the requirements for Moderate area plans in CAA section 189(a), to the extent the state has not already met those requirements in the Moderate area plan submitted for the area.⁴⁸ In

⁴⁶ As discussed in section IV.H, California submitted nonattainment NSR SIP revisions to address the subpart 4 requirements for the San Joaquin Valley Serious PM_{2.5} nonattainment area on November 20, 2019. We are not proposing any action on this submission at this time. We will act on this submission through a separate rulemaking, as appropriate.

⁴⁷ 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).

⁴⁸ Because the EPA has not previously approved a SIP submission for the San Joaquin Valley as meeting the subpart 4 RACM Moderate area planning requirement under CAA section 189 for the 1997 24-hour PM_{2.5} NAAQS, the EPA is

in addition, the Serious area plan must meet the general requirements applicable to all SIP submissions under section 110 of the CAA, including the requirement to provide necessary assurances that the implementing agencies have adequate personnel, funding, and authority under section 110(a)(2)(E); and the requirements concerning enforcement provisions in section 110(a)(2)(C).

B. Requirements for Serious PM_{2.5} Areas That Fail To Attain

In the event that a Serious area fails to attain the PM_{2.5} NAAQS by the applicable attainment date, CAA section 189(d) requires that "the State in which such area is located shall, after notice and opportunity for public comment, submit within 12 months after the applicable attainment date, plan revisions which provide for attainment of the . . . standard . . ." An attainment plan under section 189(d) must, among other things, demonstrate expeditious attainment of the NAAQS within the time period provided under CAA section 179(d)(3) and provide for annual reductions in emissions of direct PM_{2.5} or a PM_{2.5} plan precursor pollutant within the area of not less than five percent per year from the most recent emissions inventory for the area until attainment.⁴⁹ In addition to the requirement to submit control measures providing for a five percent reduction in emissions of certain pollutants on an annual basis, the EPA interprets CAA section 189(d) as requiring a state to submit an attainment plan that includes the same basic statutory plan elements that are required for other attainment plans.⁵⁰

Specifically, a state must submit to the EPA its plan to meet the requirements of CAA section 189(d) in the form of a complete attainment plan submission that includes the following elements:⁵¹

1. A comprehensive, accurate, current inventory of actual emissions from all sources of PM_{2.5} and PM_{2.5} precursors in the area;

2. A Serious area plan control strategy that ensures that BACM, including BACT, for the control of direct PM_{2.5} and PM_{2.5} precursors are implemented in the area;

3. Additional measures (beyond those already adopted in previous

evaluating relevant portions of the SJV PM_{2.5} Plan for compliance with these requirements, in addition to the requirements of CAA sections 189(b) and 189(d).

⁴⁹ CAA section 189(d), 40 CFR 51.1004(a)(3), 40 CFR 51.1010(c).

⁵⁰ 81 FR 58010, 58098.

⁵¹ 40 CFR 51.1003(c)(1).

nonattainment plan SIP submissions for the area as RACM/RACT, BACM/BACT, and most stringent measures (MSM) (if applicable))⁵² that provide for attainment of the NAAQS as expeditiously as practicable and, from the date of such submission until attainment, demonstrate that the plan will at a minimum achieve an annual five percent reduction in emissions of direct PM_{2.5} or any PM_{2.5} plan precursor;

4. A demonstration (including air quality modeling) that the plan provides for attainment of the NAAQS at issue as expeditiously as practicable;

5. Plan provisions that require RFP;

6. Quantitative milestones that the state is to meet every three years until the area is redesignated attainment and that demonstrate RFP toward attainment by the applicable date;

7. Contingency measures to be implemented if the state fails to meet any requirement concerning RFP or quantitative milestones or to attain the NAAQS at issue by the applicable attainment date; and

8. 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 NAAQS at issue in the area.⁵³

A state's section 189(d) plan submission must demonstrate attainment as expeditiously as practicable, and no later than five years from the date of the EPA's determination that the area failed to attain, consistent with sections 179(d)(3) and 172(a)(2) of the CAA.⁵⁴

A state with a Serious PM_{2.5} nonattainment area that fails to attain the NAAQS by the applicable Serious area attainment date must also address any statutory requirements applicable to Moderate and Serious nonattainment area plans under CAA sections 172 and 189 of the CAA to the extent that those requirements have not already been met.⁵⁵ Because the EPA has not previously approved a SIP submission

⁵² MSM is applicable if the EPA has previously granted an extension of the attainment date under CAA section 188(e) for the nonattainment area and NAAQS at issue.

⁵³ As discussed in section IV.H, California submitted nonattainment NSR SIP revisions to address the subpart 4 requirements for the San Joaquin Valley Serious PM_{2.5} nonattainment area on November 20, 2019. We are not proposing any action on this submission at this time. We will act on this submission through a separate rulemaking, as appropriate.

⁵⁴ 81 FR 84481, 84482.

⁵⁵ 81 FR 58010, 58098.

for the San Joaquin Valley as meeting the subpart 4 RACM Moderate area planning requirements under CAA section 189 for the 1997 24-hour PM_{2.5} NAAQS, the EPA is evaluating relevant portions of the SJV PM_{2.5} Plan for compliance with this requirement. In addition, as discussed above, the EPA has not previously approved a SIP submission for the San Joaquin Valley as meeting the Serious area planning requirements under CAA section 189(b)(1) for the 1997 24-hour PM_{2.5} NAAQS. Some Serious area planning requirements operate on a timeline that is based on the outermost statutory Serious area attainment date of the end of the tenth calendar year following the area's designation to nonattainment. Because section 189(d) requires a state to address any applicable Serious area requirements that the state has not already met in the area, and the section 189(d) obligations do not come into effect until an area has failed to attain the NAAQS by the Serious area attainment date, the EPA proposes that it should evaluate any previously unmet Serious area planning obligations based on the current, applicable attainment date appropriate under section 189(d), and not the original Serious area attainment date.

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");⁵⁶ (2) "State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990; Supplemental" ("General Preamble Supplement");⁵⁷ 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").⁵⁸ 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} NAAQS.⁵⁹ We discuss these regulatory requirements and interpretations of the Act as appropriate in our evaluation of the SJV PM_{2.5} Plan that follows.

IV. Review of the San Joaquin Valley PM_{2.5} Plan for the 1997 24-Hour PM_{2.5} NAAQS

The EPA is evaluating the SJV PM_{2.5} Plan against the Serious area requirements for the 1997 24-hour PM_{2.5} NAAQS and the section 189(d) requirements for the 1997 24-hour PM_{2.5} NAAQS, as laid out in section III of this proposal. Many requirements for both a Serious area plan and a section 189(d) plan are structured around the relevant statutory attainment date. The latest statutory Serious area attainment date for the San Joaquin Valley area was December 31, 2015.⁶⁰ On November 23, 2016, the EPA determined that the area failed to attain by the Serious area attainment date.

For the purposes of the section 189(d) requirements, the attainment date is the date by which a state can attain the NAAQS as expeditiously as practicable, but no later than five years from the publication date of the final determination of failure to attain.⁶¹ As discussed in section IV.D, the SJV PM_{2.5} Plan projected that attainment could be achieved in fewer than five years, *i.e.*, by December 31, 2020.

When the State submitted the SJV PM_{2.5} Plan in 2019, the State withdrew its previous Serious area plan that it had developed to meet the December 31, 2015 Serious area attainment date. Because the State submitted the SJV PM_{2.5} Plan after the EPA's finding that the area had failed to attain by the applicable Serious area attainment date, the State could not demonstrate in the SJV PM_{2.5} Plan that the area would attain by the Serious area attainment date, nor could it address other requirements based on this attainment date, such as RFP and quantitative milestones, because many of the relevant dates had already passed. As described in section III of this

document, in a section 189(d) plan, a state must address any statutory requirements applicable to Moderate and Serious nonattainment area plans to the extent that it has not already met those requirements, but the EPA believes that it should base this evaluation on the current applicable attainment date under section 189(d). For example, it would be illogical to require a state to submit a Serious area modeled attainment demonstration that provided for attainment by December 31, 2015, after the EPA has already determined based on monitoring data that the state failed to attain by such date.

For the purposes of our evaluation of the Serious area plan requirements, although the State is required to submit a Serious area plan, and it must structure such a plan based on the Serious area attainment date, it would serve no purpose to evaluate the SJV PM_{2.5} Plan against the now-passed Serious area attainment date by which the area has already failed to attain. For example, RFP and quantitative milestones normally are dependent upon the attainment date. Accordingly, because the State must still meet all Serious area plan requirements, even if doing so later in conjunction with the section 189(d) plan and its later attainment date, we will evaluate the State's compliance with the Serious area plan requirements in light of the later section 189(d) attainment date, as appropriate. Where the State in the SJV PM_{2.5} Plan applies the section 189(d) attainment date to a Serious area requirement, we will note the statutory Serious area timeline and accept the submission in fulfillment of the State's Serious area plan obligation, but evaluate the submission in light of the section 189(d) attainment date.

A. Emissions Inventories

1. Statutory and Regulatory Requirements

CAA section 172(c)(3) requires that each SIP include a comprehensive, accurate, current inventory of actual emissions from all sources of the relevant pollutant or pollutants in the nonattainment area. The EPA discussed the emissions inventory requirements that apply to PM_{2.5} nonattainment areas in the PM_{2.5} SIP Requirements Rule and codified these requirements in 40 CFR 51.1008.⁶² The EPA has also issued guidance concerning emissions

⁵⁹ 81 FR 58010.

⁶⁰ As discussed in section I.B, California submitted its Serious area plan for the 1997 24-hour PM_{2.5} NAAQS in two submissions dated June 25, 2015 and August 13, 2015, including a request under section 188(e) to extend the attainment date for the 1997 24-hour PM_{2.5} NAAQS by three years (to December 31, 2018). On October 6, 2016, the EPA denied the request for an extension, but did not finalize action on the Serious area plan submissions. Accordingly, the Serious area attainment date remained unchanged: As expeditiously as practicable but no later than December 31, 2015.

⁶¹ CAA section 179(d)(3); 81 FR 84481, 84482. The determination of failure to attain published on November 23, 2016.

⁶² *Id.* at 58098–58099.

⁵⁶ 57 FR 13498 (April 16, 1992).

⁵⁷ 57 FR 18070 (April 28, 1992).

⁵⁸ 59 FR 41998 (August 16, 1994).

inventories for PM_{2.5} nonattainment areas.⁶³

The base year emissions inventory for a Serious area attainment plan or a CAA section 189(d) plan must 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,⁶⁴ and emissions of all chemical precursors to the formation of secondary PM_{2.5}, *i.e.*, nitrogen oxides (NO_x), sulfur dioxide (SO₂), volatile organic compounds (VOC), and ammonia.⁶⁵

The emissions inventory base year for a Serious area attainment plan must be one of the three years for which monitoring data were used to reclassify the area to Serious, or another technically appropriate year justified by the state in its Serious area SIP submission.⁶⁶ The emissions inventory base year for a Serious PM_{2.5} nonattainment area subject to CAA section 189(d) must be one of the three years for which the EPA used monitored data to determine that the area failed to attain the PM_{2.5} NAAQS by the applicable Serious area attainment date, or another technically appropriate year justified by the state in its Serious area SIP submission.⁶⁷

A state's SIP submission must include documentation explaining how it calculated emissions data for the inventory. In estimating mobile source emissions, a state should use the latest emissions models and planning assumptions available at the time the SIP is developed. The latest EPA-approved version of California's mobile source emission factor model for estimating tailpipe, brake, and tire wear emissions from on-road mobile sources that was available during the State's and District's development of the SJV PM_{2.5} Plan was EMFAC2014.⁶⁸ Following

⁶³ "Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations," U.S. EPA, May 2017 ("Emissions Inventory Guidance"), available at <https://www.epa.gov/air-emissions-inventories/air-emissions-inventory-guidance-implementation-ozone-and-particulate>.

⁶⁴ The Emissions Inventory Guidance identifies the types of sources for which the EPA expects states to provide condensable PM emissions inventories. Emissions Inventory Guidance, section 4.2.1 ("Condensable PM Emissions"), 63–65.

⁶⁵ 40 CFR 51.1008(b)(1) and (c)(1).

⁶⁶ 40 CFR 51.1008(b)(1).

⁶⁷ 40 CFR 51.1008(c)(1).

⁶⁸ 80 FR 77337 (December 14, 2015). EMFAC is short for Emission FACTor. The EPA announced the availability of the EMFAC2014 model, effective on

CARB's submission of the Plan, the EPA approved EMFAC2017, the latest revision to this mobile source emissions model. 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.^{69 70}

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.⁷¹ These future emissions projections are necessary components of the attainment demonstrations required under CAA sections 189(b)(1) and 189(d) and the demonstration of RFP required under section 172(c)(2).⁷² Emissions projections for future years (referred to in the Plan as "forecasted inventories") should account for, among other things, the ongoing effects of economic growth and adopted emissions control requirements. The state's SIP submission should include documentation to explain how the state calculated the emissions projections. Where a state chooses to allow new major stationary sources or major modifications to use emissions reduction 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

the date of publication in the **Federal Register**, for use in state implementation plan development and transportation conformity in California. Upon that action, EMFAC2014 was required to be used for all new regional emissions analyses and CO, PM₁₀, and PM_{2.5} hot-spot analyses that were started on or after December 14, 2017, which was the end of the grace period for using the prior mobile source emissions model, EMFAC2011.

⁶⁹ 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 emissions tests results. 76 FR 6328 (February 4, 2011). CARB used the revised 2011 AP-42 methodology in developing on-road mobile source emissions; see https://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2016.pdf.

⁷⁰ AP-42 has been published since 1972 as the primary source of the EPA's emission factor information and is available at <https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-Compilation-air-emissions-factors>. It contains emission factors and process information for more than 200 air pollution source categories. A source category is a specific industry sector or group of similar emitting sources. The emission factors have been developed and compiled from source test data, material balance studies, and engineering estimates.

⁷¹ 40 CFR 51.1008 and 51.1012. See also Emissions Inventory Guidance, section 3 ("SIP Inventory Requirements and Recommendations").

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

the emissions from such previously shutdown or curtailed emissions units.⁷³

2. Summary of the State's Submission

The State included summaries of the planning emissions inventories for direct PM_{2.5} and PM_{2.5} precursors (NO_x, SO_x,⁷⁴ VOC,⁷⁵ and ammonia) and the documentation for the inventories for the San Joaquin Valley 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.

CARB and District staff worked together to develop the emissions inventories for the San Joaquin Valley PM_{2.5} nonattainment area. The District worked with operators of the stationary facilities in the nonattainment area to develop the stationary source emissions estimates. The responsibility for developing emissions estimates for area sources such as agricultural burning and paved road dust was shared by the District and CARB. CARB staff developed the emissions inventories for both on-road and non-road mobile sources.⁷⁶

The Plan includes winter (24-hour) average and annual average daily emissions inventories for the 2013 base year, which CARB derived from the 2012 emissions inventory, and estimated emissions for forecasted years from 2017 through 2028 for the attainment and RFP demonstrations for the 1997, 2006, and 2012 PM_{2.5} NAAQS.⁷⁷ In this proposal, we are proposing action on those winter average and annual average emissions inventories necessary to support the Serious area and CAA section 189(d) nonattainment plans for the 1997 24-

⁷³ 40 CFR 51.165(a)(3)(ii)(C)(1).

⁷⁴ 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 document.

⁷⁵ 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 document.

⁷⁶ 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.

⁷⁷ 2018 PM_{2.5} Plan, Appendix B, B-18 to B-19. The winter average daily planning inventory corresponds to the months of November through April, when daily, ambient PM_{2.5} concentrations are typically highest. The base year inventory is from the California Emissions Inventory Development and Reporting System and future year inventories were estimated using the California Emission Projection Analysis Model (CEPAM), 2016 SIP Baseline Emission Projections, version 1.05.

hour PM_{2.5} NAAQS, *i.e.*, the 2013 base year inventory, forecasted inventories for the RFP milestone years of 2017, 2020 (attainment year), and 2023 (post-attainment milestone year), and additional forecasted emissions inventories for 2018 and 2019 to support the five percent annual emissions reduction demonstration as required by CAA section 189(d). Each inventory includes emissions from stationary, area, on-road, and non-road sources.

CARB developed the base year inventories for stationary sources using actual emissions reports from facility operators. The State developed the base year emissions inventory for area sources using the most recent models and methodologies available at the time the State was developing the Plan.⁷⁸ The Plan also includes background, methodology, and inventories of condensable and filterable PM_{2.5}

emissions from stationary point and non-point combustion sources that are expected to generate condensable PM_{2.5}.⁷⁹ CARB used EMFAC2014 to estimate on-road motor vehicle emissions based on transportation activity data from the 2014 Regional Transportation Plan (2014 RTP) adopted by the transportation planning agencies in the San Joaquin Valley.⁸⁰ Re-entrained paved road dust emissions were calculated using a CARB methodology consistent with the EPA's AP-42 road dust methodology.⁸¹

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.⁸² In addition, the Plan states that the District is providing for use of pre-base year ERCs as offsets by

accounting for such ERCs in the projected 2025 emissions inventory.⁸³ The 2018 PM_{2.5} Plan identifies growth factors, control factors, and estimated offset use between 2013 and 2025 for direct PM_{2.5}, NO_x, SO_x, and VOC emissions by source category and lists all pre-base year ERCs issued by the District for PM₁₀, NO_x, SO_x, and VOC emissions, by facility.⁸⁴

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

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

Category	Direct PM _{2.5}	NO _x	SO _x	VOC	Ammonia
Stationary Sources	8.5	35.0	6.9	86.6	13.9
Area Sources	41.4	11.5	0.5	156.8	291.5
On-Road Mobile Sources	6.4	188.7	0.6	51.1	4.4
Non-Road Mobile Sources	4.4	65.3	0.3	27.4	0.0
Totals ^a	60.8	300.5	8.4	321.9	309.8

Source: 2018 PM_{2.5} Plan, Appendix B, tables B-1 to B-5.

^a Totals reflect disaggregated emissions and may not add exactly as shown here due to rounding.

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

Category	Direct PM _{2.5}	NO _x	SO _x	VOC	Ammonia
Stationary Sources	8.8	38.6	7.2	87.1	13.9
Area Sources	41.5	8.1	0.3	153.4	310.9
On-Road Mobile Sources	6.4	183.1	0.6	49.8	4.4
Non-Road Mobile Sources	5.8	87.4	0.3	33.8	0.0
Totals ^a	62.5	317.2	8.5	324.1	329.2

Source: 2018 PM_{2.5} Plan, Appendix B, tables B-1 to B-5.

^a Totals reflect disaggregated emissions and may not add exactly as shown here due to rounding.

3. The EPA's Review of the State's Submission

We have reviewed the emissions inventories in the SJV PM_{2.5} Plan that pertain to the 1997 24-hour PM_{2.5} NAAQS and the emissions inventory estimation methodologies used by California for consistency with CAA requirements and the EPA's guidance. We find that the inventories are based on the most current and accurate information available to the State and

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

In accordance with 40 CFR 51.1008(b)(1), the 2013 base year is one of the three years of monitored data with which the EPA reclassified the San Joaquin Valley area to Serious. Furthermore, in accordance with 40 CFR 51.1008(c)(1), the 2013 base year is one of the three years of monitored data with which the EPA determined that the San Joaquin Valley area failed to attain the PM_{2.5} NAAQS by the applicable Serious area attainment date for the

⁷⁸ 2018 PM_{2.5} Plan, Appendix B, section B.2 ("Emissions Inventory Summary and Methodology").

⁷⁹ Id. at B-42 to B-44.

⁸⁰ Id. at B-37.

⁸¹ Id. at B-28.

⁸² Id. at B-18 and B-19.

⁸³ 2018 PM_{2.5} Plan, Appendix I, I-1 to I-5.

⁸⁴ Id. at tables I-1 to I-5.

1997 24-hour PM_{2.5} NAAQS.⁸⁵ The 2013 base year emissions inventories represent 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 emissions projections, we have reviewed the growth and control factors and find them acceptable and thus conclude that the future baseline emissions projections, which reflect ongoing emissions reductions from existing (*i.e.*, “baseline”) control measures as discussed in section IV.C.2.a, in the SJV PM_{2.5} Plan reflect appropriate calculation methods and the latest planning assumptions. Also, as a general matter, the EPA will approve a SIP submission that takes emissions reduction credit for a control measure only where the EPA has approved the measure as part of the SIP. Thus, for example, to take credit for the emissions reductions from newly adopted or amended District rules for stationary sources, the related rules must be approved by the EPA into the SIP. Table 1 of the EPA’s “Technical Support Document, San Joaquin Valley PM_{2.5} Plan for the 1997 24-hour PM_{2.5} NAAQS,” August 2021 (“EPA’s 1997 24-hour PM_{2.5} TSD”) shows District rules with post-2013 compliance dates that are reflected in the future year baseline inventories, along with information on the EPA’s approval of these rules, and shows that stationary source emissions reductions assumed by the SJV PM_{2.5} Plan for future years are supported by rules approved as part of the California SIP for the San Joaquin Valley. With respect to mobile sources, the EPA has taken action in recent years to approve CARB mobile source regulations into the state-wide portion of the California SIP. We therefore find that the future year baseline projections in the SJV PM_{2.5} Plan are properly supported by SIP-approved stationary and mobile source measures.⁸⁶

⁸⁵ 81 FR 84481, 84482.

⁸⁶ 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. On September 27, 2019, the U.S. Department of Transportation and the EPA (the Agencies) issued a notice of final rulemaking for 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 for the ZEV sales mandate and vehicle GHG standards. 84 FR 51310. See also proposed SAFE rule at 83 FR 42986 (August 24, 2018). In response to SAFE I, CARB developed EMFAC off-model adjustment factors to account for anticipated changes in on-road emissions. On March 12, 2020, the EPA

For these reasons, we are proposing to approve the 2013 base year emissions inventories in the SJV PM_{2.5} Plan for the 1997 24-hour PM_{2.5} NAAQS as meeting the requirements of CAA section 172(c)(3) and 40 CFR 51.1008 for purposes of both the Serious area and the CAA section 189(d) attainment plans. We are also proposing to find that the forecasted inventories in the Plan for the years 2017, 2018, 2019, 2020, and 2023 provide an adequate basis for the BACM, RFP, and the modeled attainment demonstration analyses in the SJV PM_{2.5} Plan.

B. PM_{2.5} Precursors

1. Statutory and Regulatory Requirements

The composition of PM_{2.5} is complex and highly variable due in part to the large contribution of secondary PM_{2.5} to total fine particle mass in most locations, and to the complexity of secondary particle formation processes. A large number of possible chemical reactions, often non-linear in nature, can convert gaseous NO_x, SO₂, VOC, and ammonia to PM_{2.5}, making them precursors to PM_{2.5}.⁸⁷ Formation of secondary PM_{2.5} may also depend on atmospheric conditions, including solar radiation, temperature, and relative humidity, and the interactions of precursors with preexisting particles and with cloud or fog droplets.⁸⁸

Under subpart 4 of part D, title I of the CAA and the PM_{2.5} SIP Requirements Rule, each state containing a PM_{2.5} nonattainment area must evaluate all PM_{2.5} precursors for regulation unless, for any given PM_{2.5} precursor, the state demonstrates to the Administrator’s satisfaction that such precursor does not contribute significantly to PM_{2.5} levels

informed CARB that the EPA considers these adjustment factors to be acceptable for future use. See letter dated March 12, 2020 from Elizabeth J. Adams, EPA Region IX, to Steven Cliff, CARB. On April 30, 2020 (85 FR 24174), the Agencies issued a notice of final rulemaking titled: *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 August 2018 SAFE proposal. The effect of both SAFE final rules (SAFE I and SAFE II) on the on-road vehicle mix in the San Joaquin Valley 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 attainment, RFP, or five percent reductions demonstrations for the 1997 24-hour PM_{2.5} NAAQS in the SJV PM_{2.5} Plan.

⁸⁷ “Air Quality Criteria for Particulate Matter” (EPA/600/P-99/002aF), EPA, October 2004, Chapter 3.

⁸⁸ “Regulatory Impact Analysis for the Final Revisions to the National Ambient Air Quality Standards for Particulate Matter” (EPA/452/R-12-005), EPA, December 2012), 2–1.

that exceed the NAAQS in the nonattainment area.⁸⁹ The provisions of subpart 4 do not define the term “precursor” for purposes of PM_{2.5}, nor do they explicitly require the control of any specifically identified PM_{2.5} precursor. The statutory definition of “air pollutant,” however, provides that the term “includes any precursors to the formation of any air pollutant, to the extent the Administrator has identified such precursor or precursors for the particular purpose for which the term ‘air pollutant’ is used.”⁹⁰ The EPA has identified NO_x, SO₂, VOC, and ammonia as precursors to the formation of PM_{2.5}.⁹¹ Accordingly, the attainment plan requirements of subpart 4 apply to emissions of all four precursor pollutants and direct PM_{2.5} from all types of stationary, area, and mobile sources, except as otherwise provided in the Act (*e.g.*, CAA section 189(e)).

Section 189(e) of the Act requires that the control requirements for major stationary sources of direct PM₁₀ 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 RACM and RACT, BACM and BACT, MSM, and new source review (NSR)). Although section 189(e) explicitly addresses only major stationary sources, the EPA interprets the Act as authorizing it also to determine, under appropriate circumstances, that regulation of specific PM_{2.5} precursors from other source categories in a given nonattainment area is not necessary.⁹² For example, under the EPA’s longstanding interpretation of the control requirements that apply to stationary, area, and mobile sources of PM₁₀ precursors in the nonattainment area under CAA section 172(c)(1) and subpart 4,⁹³ a state may demonstrate in a SIP submission that control of a certain precursor pollutant is not necessary because it does not contribute significantly to ambient PM₁₀ levels in the nonattainment area and is not needed for attainment.⁹⁴

Under the PM_{2.5} SIP Requirements Rule, a state may elect to submit to the

⁸⁹ 81 FR 58010, 58017–58020.

⁹⁰ CAA section 302(g).

⁹¹ 81 FR 58010, 58015.

⁹² *Id.* at 58018–58019.

⁹³ General Preamble, 13539–13542.

⁹⁴ 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).

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.⁹⁵ 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, then the state is not required to control emissions of the relevant precursor from sources in the attainment plan.⁹⁶

In addition, in May 2019, the EPA issued the “Fine Particulate Matter (PM_{2.5}) Precursor Demonstration Guidance” (“PM_{2.5} Precursor Guidance”),⁹⁷ 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. 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.⁹⁸ The EPA’s recommendations in the PM_{2.5} Precursor Guidance are generally consistent with those in the Draft PM_{2.5} Precursor Guidance, with some exceptions, including that the EPA’s recommended contribution threshold for the 24-hour PM_{2.5} NAAQS changed from 1.3 µg/m³ in the draft guidance to 1.5 µg/m³ in the final guidance.⁹⁹

We are evaluating the 1997 24-hour PM_{2.5} NAAQS portion of the SJV PM_{2.5} Plan in accordance with the presumption embodied within subpart 4, that states address all PM_{2.5} precursors in the evaluation of potential control measures unless the state adequately demonstrates that emissions of a particular precursor or precursors

⁹⁵ 40 CFR 51.1006(a)(1).

⁹⁶ Id.

⁹⁷ “PM_{2.5} Precursor Demonstration Guidance,” EPA-454/R-19-004, May 2019, including memorandum 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.

⁹⁸ “PM_{2.5} Precursor Demonstration Guidance, Draft for Public Review and Comments,” EPA-454/P-16-001, November 17, 2016, including memorandum dated November 17, 2016 from Stephen D. Page, Director, OAQPS, EPA to Regional Air Division Directors, Regions 1–10, EPA.

⁹⁹ For the 24-hour PM_{2.5} NAAQS, the EPA generally expects that a precursor demonstration showing that the air quality impact of a given precursor at all relevant locations does not exceed a contribution threshold of 1.5 µg/m³ will be adequate to exempt sources of that precursor from control requirements. PM_{2.5} Precursor Guidance, 17,

do not contribute significantly to ambient PM_{2.5} levels that exceed the PM_{2.5} NAAQS in the nonattainment area and are not necessary for attainment. In reviewing any determination by a state to exclude a PM_{2.5} precursor from the required evaluation of potential control measures, we consider both the magnitude of the precursor’s contribution to ambient PM_{2.5} concentrations in the nonattainment area and the sensitivity of ambient PM_{2.5} concentrations in the area to reductions in emissions of that precursor.

2. Summary of the State’s Submission

The State presents a brief summary of its PM_{2.5} precursor analysis in Chapter 5 of the 2018 PM_{2.5} Plan and the full precursor demonstration in Appendix G (“Precursor Demonstration”) of the 2018 PM_{2.5} Plan.¹⁰⁰ CARB presents additional modeling results in Appendix K (“Modeling Attainment Demonstration”), section 5.6 (“PM_{2.5} Precursor Sensitivity Analysis”). CARB also provided clarifying information on its precursor assessment, including an Attachment A to its letter transmitting the 2018 PM_{2.5} Plan to the EPA¹⁰¹ and further clarifications in five email transmittals.¹⁰² The CARB Staff Report contains additional discussion of the role of ammonia in the formation of ammonium nitrate and the role of VOC in the formation of ammonium nitrate and secondary organic aerosol.¹⁰³

¹⁰⁰ A copy of the contents of Appendix G appears in the CARB Staff Report, Appendix C4 (“Precursor Demonstrations for Ammonia, SO_x, and ROG”).

¹⁰¹ Letter dated May 9, 2019, from Richard Corey, Executive Officer, CARB, to Michael Stoker, Regional Administrator, EPA Region 9, Attachment A (“Clarifying information for the San Joaquin Valley 2018 Plan regarding model sensitivity related to ammonia and ammonia controls”).

¹⁰² Email dated June 20, 2019, from Jeremy Avise, CARB, to Scott Bohning, EPA Region IX, Subject: “RE: SJV model disbenefit from SO_x reduction,” with attachment (“CARB’s June 2019 Precursor Clarification”); email dated September 19, 2019, from Jeremy Avise, CARB, to Scott Bohning, EPA Region IX, Subject: “FW: SJV species responses,” 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, Subject: “Clarifying information on ammonia,” 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”).

¹⁰³ CARB Staff Report, Appendix C, 9–16. The CARB Staff Report, Appendix C4 (“Precursor Demonstrations for Ammonia, SO_x, and ROG”) is very similar to the contents of Appendix G of the 2018 PM_{2.5} Plan.

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 San Joaquin Valley. The State supplemented the sensitivity analysis, particularly for ammonia, with additional information, including factors identified in the PM_{2.5} Precursor Guidance, such as emissions trends, the appropriateness of future year versus base year sensitivity, available emissions controls, and the severity of nonattainment.¹⁰⁴ These analyses led CARB to conclude that direct PM_{2.5} and NO_x emissions contribute significantly to ambient PM_{2.5} levels that exceed the PM_{2.5} NAAQS in the San Joaquin Valley while ammonia, SO_x, and VOC do not contribute significantly to such exceedances.¹⁰⁵ We summarize the State’s analysis and conclusions below. For a more detailed summary of the precursor demonstration in the Plan, please refer to the EPA’s “Technical Support Document, EPA Evaluation of PM_{2.5} Precursor Demonstration, San Joaquin Valley PM_{2.5} Plan for the 2006 PM_{2.5} NAAQS,” February 2020 (“EPA’s February 2020 Precursor TSD”).

For direct PM_{2.5} and NO_x, CARB modeled the sensitivity of ambient PM_{2.5} in the San Joaquin Valley to a 30 percent reduction in anthropogenic emissions of each pollutant in 2013, 2020, and 2024.¹⁰⁶ The State concluded that direct PM_{2.5} and NO_x emissions reductions will continue to have a significant impact on 24-hour PM_{2.5} design values in the San Joaquin Valley, with NO_x reductions being particularly important.¹⁰⁷ Consistent with this conclusion, the State focused the control strategy and attainment demonstration on these two pollutants,

¹⁰⁴ PM_{2.5} Precursor Guidance, 18–19 (consideration of additional information), 31 (available emissions controls), and 35–36 (appropriateness of future year versus base year sensitivity).

¹⁰⁵ Direct PM_{2.5} emissions are considered a primary source of ambient PM_{2.5} (*i.e.*, no further formation in the atmosphere is required), and therefore is not considered a precursor pollutant under subpart 4, which may differ from a more generalized understanding of what contributes to ambient PM_{2.5}.

¹⁰⁶ 2018 PM_{2.5} Plan, Chapter 5, 5–7 to 5–8. CARB modeled the effects of both NO_x reductions and direct PM_{2.5} reductions but the direct PM_{2.5} results were used only as a point of comparison, as direct PM_{2.5} emissions must be regulated in all PM_{2.5} nonattainment areas.

¹⁰⁷ Id. at 5–8; and 2018 PM_{2.5} Plan, Appendix G, 2. CARB presents its sensitivity analysis for emissions reductions in direct PM_{2.5} and NO_x in the Plan’s attainment demonstration appendix. 2018 PM_{2.5} Plan, Appendix K, Table 47 (annual average design values) and Table 48 (24-hour average design values).

as described in section IV.C of this preamble.

For ammonia, SO_x, and VOC, CARB assessed the 2015 annual average concentration of each precursor in ambient PM_{2.5} at Bakersfield, for which the necessary speciated PM_{2.5} data are available and where the highest PM_{2.5} design values have been recorded in most years, and compared those concentrations to the recommended annual average contribution threshold of 0.2 µg/m³ from the Draft PM_{2.5} Precursor Guidance, which was available at the time the State developed the SIP.¹⁰⁸ The contributions of ammonia, SO_x, and VOC were 5.2 µg/m³, 1.6 µg/m³, and 6.2 µg/m³, respectively. Given that these levels are well above the EPA's 0.2 µg/m³ recommended contribution threshold, the State proceeded with a sensitivity-based analysis.

CARB's sensitivity-based analysis used the same Community Multiscale Air Quality (CMAQ) modeling platform as that used for the Plan's attainment demonstration. The State modeled the sensitivity of ambient PM_{2.5} concentration in the San Joaquin Valley to 30 percent and 70 percent emissions reductions in 2013, 2020, and 2024 for each of ammonia, SO_x, and VOC. The State estimated baseline (2013, 2020, and 2024) design values for PM_{2.5} using relative response factors (RRFs) and calculated the ammonia, SO_x, and VOC precursor contribution for a given year and for each sensitivity scenario (30 percent and 70 percent emissions reductions) as the difference between its baseline design value and the design value for each sensitivity scenario.¹⁰⁹

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

a. Ammonia

For ammonia, the State compared the 24-hour precursor contributions to 1.3 µg/m³, the recommended contribution threshold in the Draft PM_{2.5} Precursor

Guidance. For a modeled 30 percent ammonia emissions reduction, the ambient PM_{2.5} responses in 2013 ranged from 0.9 to 3.3 µg/m³ across 15 monitoring sites, with a majority of sites above the 1.3 µg/m³ contribution threshold (and also above the 1.5 µg/m³ contribution threshold in the final PM_{2.5} Precursor Guidance). PM_{2.5} responses in 2020 ranged from 0.5 to 1.9 µg/m³, with four sites at or above the 1.3 µg/m³ contribution threshold, including one site above the 1.5 µg/m³ contribution threshold in the final PM_{2.5} Precursor Guidance. In 2024, all modeled responses were below both recommended contribution thresholds. For a modeled 70 percent ammonia emissions reduction, the ambient PM_{2.5} responses in 2013 ranged from 3.5 to 12.4 µg/m³, with all monitoring sites above the 1.3 µg/m³ threshold (and above the 1.5 µg/m³ threshold), the PM_{2.5} responses in 2020 ranged from 1.6 to 6.4 µg/m³, and the PM_{2.5} responses in 2024 ranged from 1.2 to 3.0 µg/m³, with most sites above both recommended thresholds. For further detail, please see the EPA's February 2020 Precursor TSD, Table 2, and the 2018 PM_{2.5} Plan, Appendix G, tables 2 through 7. In summary, for a 30 percent ammonia reduction, a majority of sites have PM_{2.5} responses above the contribution threshold in the 2013 modeling, decreasing to a single site above the contribution threshold for 2020, and no sites above the contribution threshold for 2024. For a 70 percent reduction, all sites are above the contribution threshold in the 2013 and 2020 modeling, and a majority of sites are above the contribution threshold in 2024.

The State based its ammonia precursor determination on the sensitivity analysis for the future years, using a 30 percent ammonia emissions reduction. These choices respectively reflect its assessment of research studies and the Plan's projected emissions reductions, and on its assessment of available emissions controls. As explained in the PM_{2.5} Precursor Guidance, precursor responses may be above the recommended contribution threshold and yet not contribute significantly to levels that exceed the standard in the area. Therefore, as recommended by the EPA, the State considered additional information to examine whether the identified PM_{2.5} responses constituted a significant contribution to ambient PM_{2.5} in the San Joaquin Valley. The additional information included research studies, emissions trends, and information to support the State's conclusion that a 30

percent ammonia emissions reduction represented a reasonable upper bound on the ammonia emissions reductions to model in estimating its contribution to ambient PM_{2.5} levels. We summarize this additional information below and provide a more detailed evaluation in the EPA's February 2020 Precursor TSD.

The State describes previous research that supports its finding that ammonium nitrate PM_{2.5} formation is the San Joaquin Valley is NO_x-limited rather than ammonia-limited.¹¹⁰ Essentially, ammonia is so abundant in the San Joaquin Valley that even with large ammonia emissions reductions there would still be enough ammonia to combine with the available NO_x to readily form particulate ammonium nitrate. Therefore, ammonia emissions reductions would lead to only small decreases in PM_{2.5} concentrations. In contrast, because emissions of NO_x are less abundant in the San Joaquin Valley (*i.e.*, more limited relative to emissions of ammonia after normalizing for their differing molecular weights), the PM_{2.5} concentrations in the atmosphere are more responsive to reductions in NO_x than to reductions of ammonia. Thus, these analyses indicate that the area is NO_x-limited.

The State also points to the conclusions of a study conducted by Lurmann et al., based on ambient measurements during the winter 2000–2001 California Regional Particulate Air Quality Study intensive field study.¹¹¹ That study found that most areas of the San Joaquin Valley were NO_x-limited with respect to ammonium nitrate formation. Since that time, large additional NO_x emissions reductions have occurred, which would increase the degree to which ammonium nitrate formation in the San Joaquin Valley is NO_x-limited. Based on more recent aircraft-borne measurements during the 2013 DISCOVER–AQ campaign,¹¹² the State similarly concluded that ammonium nitrate formation is NO_x-limited based on the large amount of “excess ammonia,” which is defined as the amount of measured ammonia left over if all the nitrate and sulfate present

¹⁰⁸ 2018 PM_{2.5} Plan, Appendix G, 3. The Plan does not present a concentration-based analysis for the 24-hour average concentrations in the San Joaquin Valley. Instead, CARB relied on the annual average concentration-based analysis as an interim step to the sensitivity-based analysis, for which CARB assessed the sensitivity of both 24-hour average and annual average ambient PM_{2.5} concentrations to precursor emissions reductions. Separately, the Plan presents a graphical representation of annual average ambient PM_{2.5} components (*i.e.*, crustal particulate matter, elemental carbon, organic matter, ammonium sulfate, and ammonium nitrate) for 2011–2013 for Bakersfield, Fresno, and Modesto. 2018 PM_{2.5} Plan, Chapter 3, 3–3 to 3–4.

¹⁰⁹ This procedure is the procedure recommended by the EPA. PM_{2.5} Precursor Guidance, 37.

¹¹⁰ 2018 PM_{2.5} Plan, Appendix G, 9–10; CARB Staff Report, Appendix C, 12–15; and Attachment A to CARB's May 9, 2019 submittal letter.

¹¹¹ Frederick W. Lurmann, Steven G. Brown, Michael C. McCarthy, and Paul T. Roberts, “Processes Influencing Secondary Aerosol Formation in the San Joaquin Valley during Winter,” *Journal of the Air & Waste Management Association*, (2006), 56:12, 1679–1693, DOI: 10.1080/10473289.2006.10464573.

¹¹² Deriving Information on Surface conditions from COLUMN and VERTICALLY Resolved Observations Relevant to Air Quality,” https://www.nasa.gov/mission_pages/discover-aq/index.html.

were to combine with available ammonia to form particulate.¹¹³ The CARB Staff Report describes these conclusions in more detail and lists results from multiple other recent studies with similar conclusions.¹¹⁴ Finally, in a supplemental submittal, CARB described the results of two analyses confirming the likely underestimation of ammonia emissions in the modeled emissions inventory inputs.¹¹⁵ CARB compared CMAQ model predictions of ammonia with the 2013 DISCOVER–AQ aircraft measurements and found ammonia was underpredicted, and noted that this would result in the 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 valley-wide average was about 25 percent less than observed. Because the modeling performs well for the various PM_{2.5} components, as well as for ozone and NO₂,¹¹⁶ the CARB finding of CMAQ model underpredictions for ammonia is consistent with an underestimation of ammonia emissions inventory input to the model.

Regarding emissions trends, the CARB Staff Report presents an emissions inventory-based argument on the relative insensitivity of PM_{2.5} to ammonia reductions.¹¹⁷ CARB compared the size of the ammonia and NO_x emissions inventories in tons per day, after normalizing for their differing molecular weights, and found that ammonia was roughly three times as abundant as NO_x in 2013 and is projected to be about six times as abundant in 2025, due to the continuing decline in NO_x emissions (while ammonia emissions are generally constant into the future).¹¹⁸ While the State recognized that this is only a “first-level assessment,” it provides additional support for the State’s conclusion that NO_x, and not ammonia, is the limiting precursor for ammonium nitrate formation, and that the ammonium nitrate portion of ambient PM_{2.5} would be expected to be relatively insensitive to ammonia emissions reductions. This is also consistent with

the ammonia sensitivity modeling for the San Joaquin Valley, which showed that PM_{2.5} concentrations will be less sensitive to ammonia reductions as NO_x emissions go down in the future (*i.e.*, the PM_{2.5} impacts were much smaller in the 2020 and 2024 future modeled cases compared to the 2013 base year).

The State projected that NO_x emissions in the San Joaquin Valley would decrease by 36 percent from 2013 to 2020, and by 53 percent from 2013 to 2024, while ammonia emissions would remain relatively flat, thereby increasing the relative abundance of ammonia.¹¹⁹ Based on the Plan’s emissions reduction projections combined with the research study conclusions, the State relies on the modeled responses for the future years, rather than the 2013 base year, stating that the future year NO_x emissions are more representative of San Joaquin Valley emissions conditions.¹²⁰ The State references the Draft PM_{2.5} Precursor Guidance, which notes that it may be appropriate to model future conditions that are more representative of current atmospheric conditions and those conditions expected closer to the attainment date. The State concludes that this in fact applies to the San Joaquin Valley.¹²¹

With respect to the State’s selection of 30 percent as an upper bound on the ammonia reductions to model, the State described its review of the most important ammonia source categories in the San Joaquin Valley, existing control measures that affect ammonia emissions from these sources, additional mitigation options for these sources, and information provided in the PM_{2.5} Precursor Guidance about ammonia reductions achieved nationwide from 2011 to 2017.¹²² The primary sources of ammonia emissions identified in the 2018 PM_{2.5} Plan are: (1) Confined animal facilities (CAFs); (2) agricultural fertilizer; (3) biosolids, animal manure, and poultry litter operations; and (4) organic material composting operations.¹²³ CAFs are subject to District Rule 4570; biosolids, animal manure, and poultry litter operations are subject to District Rule 4565; and organic material composting operations are subject to District Rule 4566. Although these District rules explicitly apply only to VOC emissions from these sources, the State concludes that these

rules also reduce ammonia emissions. Appendix C of the 2018 PM_{2.5} Plan cites several scientific studies that address the correlation between VOC and ammonia emissions from these emissions sources.¹²⁴ Based on these evaluations, the State concludes that ammonia control measures achieving even the low end of the range (30 percent) are not feasible for implementation in the San Joaquin Valley and that it is therefore reasonable to treat a 30 percent ammonia reduction as an upper bound for modeling in the precursor demonstration.

In summary, the State’s sensitivity analysis presents a range of PM_{2.5} responses to ammonia emissions reductions depending on base year versus future year, and on the scale of emissions reductions that may be possible. The Plan provides the State’s bases for finding that the future year sensitivity results better represent conditions in the San Joaquin Valley than the 2013 base year and for finding a 30 percent ammonia reduction to be a reasonable upper bound for modeled ammonia emissions reductions in assessing the ammonia contribution. Based on these analyses, the State concludes that ammonia does not contribute significantly to ambient PM_{2.5} levels above the 1997 24-hour PM_{2.5} NAAQS in the San Joaquin Valley.

b. SO_x

For SO_x, the State compared the 24-hour precursor contributions to the recommended draft contribution threshold of 1.3 µg/m³ in the Draft PM_{2.5} Precursor Guidance. For modeled SO_x emissions reductions of 30 percent and 70 percent, the ambient PM_{2.5} responses in 2013 ranged from –1.4 to 0.5 µg/m³ across 15 monitoring sites, which all fall below the 1.3 µg/m³ draft contribution threshold, and hence also below the contribution threshold of 1.5 µg/m³ in the final version of the PM_{2.5} Precursor Guidance.¹²⁵ The response was below zero at most monitoring sites, indicating an increase, rather than a decrease, in ambient PM_{2.5} in response to SO_x emissions reductions (*i.e.*, a disbenefit). Only the Stockton and Manteca sites had slightly positive responses to 30 percent and 70 percent emissions reductions, and the Tranquillity site also had a slightly positive response only to a 30 percent reduction. For the 15 sites, in 2020, the responses to 30 percent and 70 percent emissions reductions ranged from –1.3 µg/m³ to

¹¹³ 2018 PM_{2.5} Plan, Appendix G, Figure 2.

¹¹⁴ CARB Staff Report, Appendix C, 12.

¹¹⁵ CARB’s April 26, 2021 Precursor Clarification.

¹¹⁶ EPA’s February 2020 Modeling TSD, 21.

¹¹⁷ CARB Staff Report, Appendix C, 15.

¹¹⁸ Annual average ammonia emissions are projected to decrease 4.6 tpd (1.4 percent) from 2013 to 2024. 2018 PM_{2.5} Plan, Appendix B, Table B–5.

¹¹⁹ 2018 PM_{2.5} Plan, Appendix G, 8–9.

¹²⁰ *Id.* at 9.

¹²¹ *Id.* (referencing Draft PM_{2.5} Precursor Guidance, 33). See also PM_{2.5} Precursor Guidance, 35.

¹²² 2018 PM_{2.5} Plan, Appendix G and Appendix C, section C–25, and CARB’s October 2019 Precursor Clarification.

¹²³ 2018 PM_{2.5} Plan, Appendix C, section C–25.

¹²⁴ *Id.* at C–314 and following.

¹²⁵ 2018 PM_{2.5} Plan, Appendix G, Table 8 and Table 9.

0.5 $\mu\text{g}/\text{m}^3$ while for 2024, the responses ranged from $-1.1 \mu\text{g}/\text{m}^3$ to $0.6 \mu\text{g}/\text{m}^3$; these are also all below the contribution threshold, with most sites showing a disbenefit from SO_x reductions.¹²⁶ The Stockton, Manteca, and Tranquillity sites showed the same pattern of slight benefits as for 2013.¹²⁷ For further detail, please see the EPA's February 2020 Precursor TSD, Table 3 and the 2018 $\text{PM}_{2.5}$ Plan, Appendix G, tables 8 and 9 and Appendix K, tables 46, 48, and 50.

CARB also included additional information regarding emissions trends and an evaluation of the SO_x emissions reduction disbenefit. We summarize this additional information below and provide a more detailed evaluation in the EPA's February 2020 Precursor TSD.

In terms of emissions trends, the State found that SO_x emissions decreased from 2013 to 2014 and then were expected to very gradually rise to 7.8 tpd in 2020 and 8.0 tpd in 2024.¹²⁸ Given that projected SO_x emissions are very similar in 2020 and 2024, the State concluded that the 2020 and 2024 sensitivity results were redundant. Comparing the ambient responses in 2013 and 2024, the State found that the responses were slightly less negative or, for a small number of sites, slightly higher in 2024, but still no more than $0.6 \mu\text{g}/\text{m}^3$ in response to a 70 percent SO_x emissions reduction.¹²⁹ This supports the State's conclusion as to the overall disbenefit of reducing SO_x emissions.

To explain the SO_x emissions reduction disbenefit that is observed in some cases, CARB refers to the non-linearity of inorganic aerosol thermodynamics, as described in a study by West et al.¹³⁰ That paper discusses how, under certain conditions, reducing SO_x could free ammonia to combine with nitrate, increasing overall $\text{PM}_{2.5}$ mass. To investigate this issue further, CARB conducted simulations with the ISORROPIA inorganic aerosol thermodynamic equilibrium model used within the CMAQ model and provided

¹²⁶ CARB's September 2019 Precursor Clarification, 2020 analysis tables 15 and 16, and 2024 analysis tables 15 and 16.

¹²⁷ 2018 $\text{PM}_{2.5}$ Plan, Appendix K, Table 48 and Table 50.

¹²⁸ 2018 $\text{PM}_{2.5}$ Plan, Appendix G, Figure 4.

¹²⁹ CARB's September 2019 Precursor Clarification, 2013 analysis Table 16 and 2024 analysis Table 16.

¹³⁰ 2018 $\text{PM}_{2.5}$ Plan, Appendix K, section 5.6 ("PM_{2.5} Precursor Sensitivity Analysis"); and West, J.J., Ansari, A.S., Pandis, S.N., 1999, Marginal $\text{PM}_{2.5}$: Nonlinear aerosol mass response to sulfate reductions in the eastern United States, *Journal of the Air & Waste Management Association*, 49, 1415–1424. <https://doi.org/10.1080/10473289.1999.10463973>.

clarifications to the EPA.¹³¹ In essence, CARB states that for some conditions typical of San Joaquin Valley, ISORROPIA switches to a different chemical regime in which the disbenefit occurs. CARB states that it is not known how well this model behavior reflects the actual atmosphere, but CARB accepts the results because it is a well-known and widely used chemical model.

Based on the small and mostly negative modeled response of ambient $\text{PM}_{2.5}$ to SO_x emissions reductions, and based on its scientific understanding of sulfate interactions with other molecules in the air, the State concludes that SO_x does not contribute significantly to ambient $\text{PM}_{2.5}$ levels that exceed the 1997 24-hour $\text{PM}_{2.5}$ NAAQS in the San Joaquin Valley.

c. VOC

For VOC, CARB compared the 24-hour precursor contributions to the EPA's recommended draft contribution threshold of $1.3 \mu\text{g}/\text{m}^3$. For a modeled 30 percent VOC emissions reduction, the ambient $\text{PM}_{2.5}$ responses in 2013 ranged from 0.1 to $1.9 \mu\text{g}/\text{m}^3$ across 15 monitoring sites, with two sites above the $1.3 \mu\text{g}/\text{m}^3$ draft contribution threshold.¹³² The 2020 responses ranged from -0.1 to $0.6 \mu\text{g}/\text{m}^3$, with all monitoring sites below the $1.3 \mu\text{g}/\text{m}^3$ draft contribution threshold, and hence also below the contribution threshold of $1.5 \mu\text{g}/\text{m}^3$ that was finalized in the final $\text{PM}_{2.5}$ Precursor Guidance. The 2024 responses ranged from -0.4 to $0.0 \mu\text{g}/\text{m}^3$, with all monitoring sites below both the draft and final contribution thresholds. For a 70 percent VOC emissions reduction, the $\text{PM}_{2.5}$ responses in 2013 ranged from 0.2 to $4.8 \mu\text{g}/\text{m}^3$, including responses above both contribution thresholds at a majority of sites. The 2020 response ranged from -0.2 to $1.5 \mu\text{g}/\text{m}^3$, with one site at the final contribution threshold. The 2024 response ranged from -1.0 to $0.0 \mu\text{g}/\text{m}^3$ with monitoring sites below both the contribution thresholds. In other words, in response to either a 30 percent or a 70 percent reduction in VOC emissions, CARB models a decrease in ambient $\text{PM}_{2.5}$ levels at all sites for 2013, whereas for 2020, there were just small decreases in ambient $\text{PM}_{2.5}$ levels at most sites and an increase at one site, and for 2024 there were increases in

¹³¹ CARB's June 2019 Precursor Clarification.

¹³² 2018 $\text{PM}_{2.5}$ Plan, Appendix G, Table 10.

¹³³ We note that one site (Visalia) has a modeled response above the EPA's final recommended contribution threshold of $1.5 \mu\text{g}/\text{m}^3$ and one additional site (Bakersfield-California Avenue) has a modeled response below the $1.5 \mu\text{g}/\text{m}^3$ threshold but above the EPA's draft threshold of $1.3 \mu\text{g}/\text{m}^3$.

$\text{PM}_{2.5}$ at all sites, *i.e.*, a disbenefit. For further detail, please see the EPA's February 2020 Precursor TSD, Table 4, and the 2018 $\text{PM}_{2.5}$ Plan, Appendix G, tables 10 through 15.

CARB then considered additional information to assess whether these $\text{PM}_{2.5}$ responses constituted a significant contribution to ambient $\text{PM}_{2.5}$ in the San Joaquin Valley, including emissions trends and an assessment of the modeled disbenefit of VOC emissions reductions. Regarding emissions trends, CARB found that VOC emissions would decrease approximately 30 tpd (or 9 percent) from 2013 to 2024, with approximately 28 out of the 30 tpd reduction taking place by 2020.¹³⁴ The State concludes that the formation of ambient $\text{PM}_{2.5}$ from VOC may therefore differ in base and future years and that the sensitivity analysis for 2013 is not representative of current or future conditions.

CARB explained the modeled disbenefit of VOC reductions as follows: Emissions of VOC and NO_x react in the atmosphere to form organic nitrate species, such as peroxyacetyl nitrate (PAN), meaning that some portion of the NO_x emissions is not available to react with ammonia to form ammonium nitrate. In other words, VOC emissions are a "sink" for NO_x emissions. Reducing VOC emissions therefore reduces the formation of organic nitrates, so the sink is smaller and nitrate molecules are freed to react with ammonia to form particulate ammonium nitrate.¹³⁵ The State further explored the VOC disbenefit based on a 2016 CARB modeling assessment provided in Appendix A ("Air Quality Modeling") of the "2016 Moderate Area Plan for the 2012 $\text{PM}_{2.5}$ Standard" for the San Joaquin Valley ("2016 $\text{PM}_{2.5}$ Plan"), which CARB submitted to the EPA as a SIP revision on May 10, 2019.¹³⁶

Based on its sensitivity-based analysis of VOC emissions reductions, VOC emissions trends, and the scientific understanding of VOC chemistry in the San Joaquin Valley, CARB concludes that VOC emissions do not contribute significantly to $\text{PM}_{2.5}$ levels that exceed the 1997 24-hour $\text{PM}_{2.5}$ NAAQS in the San Joaquin Valley.

¹³⁴ 2018 $\text{PM}_{2.5}$ Plan, Appendix G, 19 and Figure 5.

¹³⁵ 2018 $\text{PM}_{2.5}$ Plan, Appendix K, 72 (citing Meng, Z., D. Dabdub, D., Seinfeld, J.H., Chemical Coupling Between Atmospheric Ozone and Particulate Matter, *Science* 277, 116 (1997). DOI: 10.1126/science.277.5322.116).

¹³⁶ 2016 $\text{PM}_{2.5}$ Plan, Appendix A, A–57. See also 2018 $\text{PM}_{2.5}$ Plan, Appendix K, section 5.6 ("PM_{2.5} Precursor Sensitivity Analysis"), 71–72.

3. The EPA's Review of the State's Submission

The EPA has evaluated the State's precursor demonstration consistent with the PM_{2.5} SIP Requirements Rule and the recommendations in the PM_{2.5} Precursor Guidance. Based on this evaluation, the EPA agrees that NO_x emissions contribute significantly to ambient PM_{2.5} levels that exceed the 1997 24-hour PM_{2.5} NAAQS in the San Joaquin Valley and that NO_x emissions sources, therefore, remain subject to control requirements under subparts 1 and 4 of the part D, title I of the Act. For the reasons provided below, the EPA proposes to approve the State's demonstration that ammonia, SO_x, and VOC emissions do not contribute significantly to ambient PM_{2.5} levels that exceed the 1997 24-hour PM_{2.5} NAAQS in the San Joaquin Valley.

Regarding the State's analytical approach, the EPA finds that the State based its analyses on the latest available data and studies concerning ambient PM_{2.5} formation in the San Joaquin Valley from precursor emissions. Regarding the required concentration-based analysis, the EPA finds that the State assessed the absolute annual average contribution of each precursor in ambient PM_{2.5} (*i.e.*, in 2015). On the basis of the absolute concentrations being well above the EPA's recommended contribution thresholds for both the 24-hour and annual average NAAQS, the State proceeded with its sensitivity-based analysis, which is the recommended sequence under the final PM_{2.5} Precursor Guidance.¹³⁷

With respect to the sensitivity-based analysis, we find that the State performed its analyses following the steps of the EPA's recommended approach—*i.e.*, for each modeled year and percent precursor emissions reduction, the State estimated the ambient PM_{2.5} response using the procedure recommended in the PM_{2.5} Precursor Guidance and compared the result to the recommended contribution threshold. The EPA also finds that the performance of the photochemical model was adequate for use in estimating the ambient PM_{2.5} responses, as discussed in section J ("Air Quality Model Performance") of the EPA's "Technical Support Document, EPA Evaluation of Air Quality Modeling, San Joaquin Valley PM_{2.5} Plan for the 2006 PM_{2.5} NAAQS," February 2020 ("EPA's

February 2020 Modeling TSD"). The State considered the EPA's recommended range of emissions reductions (30 percent to 70 percent) for the 2013 base year, the projected 2020 attainment year for the 1997 24-hour PM_{2.5} NAAQS, and the projected 2024 attainment year for the 2006 PM_{2.5} NAAQS, and quantified the estimated response of ambient PM_{2.5} concentrations to precursor emissions changes for the first time in a PM_{2.5} SIP submission for the San Joaquin Valley. The EPA finds that such quantification and CARB's consideration of additional information provide an informed basis on which to make a determination as to whether ammonia, SO_x, and VOC do or do not contribute significantly to ambient PM_{2.5} levels that exceed the 1997 24-hour PM_{2.5} NAAQS in the San Joaquin Valley.¹³⁸ Therefore, we turn to our evaluation of the State's determination for each of these three precursor pollutants.

a. Ammonia

For ammonia, as detailed above, CARB estimated the ambient PM_{2.5} response to both a 30 percent and a 70 percent emissions reduction. We find that it was appropriate for the State to consider additional information to interpret those results to determine whether the ammonia contribution is significant. The primary conclusion demonstrated by the State's analysis of additional information is that ammonium nitrate formation is NO_x-limited. As discussed in more detail below, we agree with this conclusion. We have evaluated CARB's determination that a projected future year is more representative of conditions in the San Joaquin Valley for sensitivity-based analyses and that 30 percent is a reasonable upper bound for ammonia emissions reductions to assess the precursor contribution, as discussed below.

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

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

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

The relative sizes of the ammonia and NO_x precursor emissions inventories after accounting for their differing molecular weights are a rough indicator of which pollutant is the limiting pollutant for production of ammonium nitrate because ammonium nitrate forms from a one-to-one ratio of molecules derived from each precursor (*i.e.*, one ammonium nitrate forms from one

¹³⁷ For further discussion of the EPA's evaluation of the State's concentration-based analysis, see the EPA's February 2020 Precursor TSD, sections entitled "Concentration-based analysis" within the EPA's evaluation for each of ammonia, SO_x, and VOC.

¹³⁸ The State did not evaluate the 2015 Serious area attainment year. Because the year has passed and the area failed to attain by the Serious area attainment date, we will evaluate the precursor analysis for the Serious area plan based on the current section 189(d) projected attainment date of December 31, 2020.

ammonium and one nitrate). However, unlike measurements and photochemical modeling, a simple emissions ratio does not account for various processes mentioned above; it assumes all the emitted molecules find one another and react. The State found ammonia to be roughly three times as abundant as NO_x in 2013 after accounting for their differing molecular weights, and even more abundant in future years. The EPA repeated the exercise to account for SO_x and found that the ratio of total ammonia to the ammonia needed to react with both nitrate and sulfate ranged from 2.7 in 2013 to 5.6 in 2028. These results are approximately the same as the CARB NO_x-only results because SO_x emissions are very small relative to NO_x and ammonia emissions (*e.g.*, in 2013, winter daily emissions were 8.4 tpd of SO_x versus 300.5 tpd of NO_x and 309.8 tpd of ammonia).¹³⁹ These observations support the State's finding that PM_{2.5} is expected to be relatively insensitive to ammonia reductions, though they are not definitive on their own.

The State also points to large decreases or projected decreases in NO_x emissions in the San Joaquin Valley from 2013 to 2024, including a 36 percent reduction from baseline measures by 2020, and a 53 percent reduction by 2024, while CARB projects that ammonia emissions will remain roughly constant (*i.e.*, decreasing 1–2 percent). In conjunction with the ambient evidence that ammonia is already chemically overabundant relative to NO_x in the San Joaquin Valley, this indicates that the overabundance will become even greater in the future, and thus ambient PM_{2.5} is expected to be even less responsive to ammonia reductions. This adds conservatism to the State's conclusions about ammonia sensitivity based on the scientific studies.

While the base year for an attainment plan for a given nonattainment area is generally more representative of current conditions, there can be situations in which it is more appropriate to use future conditions representative of when sources will operate, and the EPA believes that states may use either a base year or a future year for modeling an ambient PM_{2.5} response to precursor emissions reductions, provided the state explains how the choice of analysis year and associated assumptions are appropriate.¹⁴⁰ The 2013 modeled responses cannot be considered current at the present time, in comparison to the

2020 results. Large NO_x emissions reductions have occurred from 2013–2020 and are projected to continue to occur on through 2024, continuing to decrease the ratio of NO_x to ammonia. In light of this ongoing trend, and the ambient data indicating that models underestimate ammonia, the EPA believes that future year results, which more accurately reflect the expected NO_x to ammonia ratio, will continue to be representative, unlike the 2013 base year. These reductions are the result of regulations put in place by past air quality planning decisions and they will occur regardless of the actions that are being proposed herein. In assessing the effect of potential ammonia reductions, the EPA believes it is reasonable to account for these NO_x reductions. In addition, as noted above, the greater abundance of ammonia relative to NO_x in the 2024 year modeling is more consistent with recent ambient measurements, which suggest that the 2024 responses are more representative of current atmospheric conditions than the other model years for assessing sensitivity to ammonia reductions. Therefore, in consideration of the scientific studies and emissions trends, including the projected large amount of NO_x emissions reductions through the attainment period, the EPA agrees that use of a future year is appropriate. Given the available research and ambient data, we conclude that the modeled 2024 year is the most representative of conditions in the San Joaquin Valley.

Even if we were to set aside the more representative 2024 modeling, in the 2020 modeled responses, only the Bakersfield-Planz site is above the contribution threshold, at 1.9 µg/m³. A single value above the threshold is not determinative, particularly in light of the additional information provided above, indicating that the modeled values overestimate the contribution of ammonia to ambient PM_{2.5} levels, and that the trend continues toward less contribution in the future as the ratio of NO_x to ammonia continues to drop. Moreover, the monitored 2020 design value is attaining the 1997 24-hour PM_{2.5} NAAQS because, as discussed above and in section V of this proposal, at the current time there are not PM_{2.5} levels above the NAAQS. This is further evidence that the single 2020 modeled response above the contribution threshold is not a significant contribution to PM_{2.5} levels in excess of the NAAQS, even if the 2020 modeling were considered representative.

In the context of interpreting the full set of modeling results for ammonia emissions reductions, the EPA also

considered the State's conclusion that the absence of available ammonia controls for sources in the San Joaquin Valley supports its decision to treat a 30 percent reduction as a reasonable upper bound on the ammonia emissions reductions to model in estimating the precursor contribution. As the State correctly notes, the 30 percent to 70 percent range recommended by the EPA is based on historical NO_x and SO_x emissions reductions, and changes in ammonia emissions levels nationally from 2011 to 2017 ranged from a 9 percent decrease to a 6 percent increase.¹⁴¹ The State's descriptions of past research relied upon to develop existing rules that apply to ammonia emissions sources, as well as ongoing research, show that it has considered the availability of ammonia controls both in the past and present context, and that the State has a basis for its conclusion that 30 percent is a reasonable upper bound on achievable reductions for ammonia.

In sum, we find that the State quantified the sensitivity of ambient PM_{2.5} levels to reductions in ammonia using appropriate modeling techniques that performed well, and that the State's analysis and use of future year sensitivity data, both 2020 and 2024, is well-supported. We also find that the State adequately documented its basis for using a 30 percent reduction in ammonia emissions as an upper bound in the modeling to assess ambient sensitivity to ammonia emissions reductions. Based on 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 1997 24-hour PM_{2.5} NAAQS in the San Joaquin Valley.

b. SO_x

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

Because the results of the sensitivity analysis were all below the EPA's recommended 24-hour contribution thresholds at both the 30 percent and 70

¹³⁹ 2018 PM_{2.5} Plan, Appendix B, tables B–2, B–3, and B–4.

¹⁴⁰ PM_{2.5} Precursor Guidance, 35–36.

¹⁴¹ *Id.* at 30, Table 2.

percent emissions reductions, and in both the 2013 base year and 2020 (and 2024) future year, it is not necessary to distinguish between the timing and scale of emissions reductions with respect to the response of ambient PM_{2.5} levels as in the ammonia evaluation where the results diverged according to scale and timing of modeled emissions reductions. The EPA's February 2020 Precursor TSD contains additional detail on the EPA's evaluation of SO_x as a PM_{2.5} precursor, including the disbenefit associated with a reduction in SO_x emissions. Accordingly, we find that the State's decision to rely on the 2013 sensitivity modeling results for a 30 percent SO_x reduction is acceptable.

Therefore, on the basis of the modeled ambient PM_{2.5} response to both a 30 percent and 70 percent reduction in SO_x emissions in 2013, and on 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 1997 24-hour PM_{2.5} NAAQS in the San Joaquin Valley.

c. VOC

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

Regarding emissions trends, the EPA agrees that the 8.6 percent decrease in VOC emissions from 2013 to 2020 and the 9.2 percent projected decrease from 2013 to 2024 favors reliance on the future year modeling results. Furthermore, there is a large decrease in NO_x emissions over this period, as discussed in the EPA's evaluation of ammonia, which affects the atmospheric chemistry with respect to ambient PM_{2.5} formation from VOC emissions. The 9 percent VOC emissions reductions and

the NO_x emissions reductions are projected to result from implementation of existing baseline measures. We therefore find it reasonable to rely on future year 2020 or 2024 modeled responses to VOC emissions reductions, and both years show a disbenefit from VOC emissions reductions. The EPA also finds that the State provided a reasonable explanation for the VOC reduction disbenefit and evidence that it occurs in the San Joaquin Valley.

For 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 1997 24-hour PM_{2.5} NAAQS in the San Joaquin Valley.

C. Attainment Plan Control Strategy

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 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 achieve greater permanent and enforceable emissions reductions of 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)." ¹⁴²

Because the 2015 Serious area attainment date has passed, and the EPA found that the area failed to attain by the Serious area attainment date, we are evaluating the submission for compliance with the BACM/BACT requirements now, in conjunction with the State's SIP submission intended to meet both the Serious area plan and section 189(d) plan requirements.

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.¹⁴³ Indeed, as

¹⁴² 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.

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

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.¹⁴⁴ 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 are necessary to attain the NAAQS in the area.

Under the PM_{2.5} SIP Requirements Rule, those control measures that otherwise meet the definition of BACM/BACT but "can only be implemented in whole or in part beginning four years after reclassification" are referred to as "additional feasible measures."¹⁴⁵ In accordance with the requirements of CAA section 172(c)(6), a Serious area plan must include any additional feasible measures to control emissions of direct PM_{2.5} and PM_{2.5} precursors that are necessary and appropriate to provide for attainment of the relevant NAAQS as expeditiously as practicable and no later than the applicable attainment date.¹⁴⁶

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

- (1) Develop a comprehensive emissions 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.¹⁴⁷

The EPA allows consideration of factors such as physical plant layout,

¹⁴⁴ *Id.* and General Preamble Addendum, 42009–42010.

¹⁴⁵ 40 CFR 51.1000, 40 CFR 51.1010(a)(4)(ii).

¹⁴⁶ Because the Serious area attainment year has passed and the area failed to attain by the Serious area attainment date, we will evaluate the BACM/BACT and additional feasible measure analysis for the Serious area plan with respect to the current section 189(d) projected attainment date of December 31, 2020.

¹⁴⁷ 81 FR 58010, 58083–58085.

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.¹⁴⁸

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 revisions 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. Furthermore, because the EPA has not previously taken action to approve the California SIP as meeting the subpart 4 Moderate area planning requirements under CAA section 189 for the 1997 24-hour PM_{2.5} NAAQS for the San Joaquin Valley area, the EPA is reviewing the SJV PM_{2.5} Plan for compliance with those requirements.¹⁴⁹

The overarching requirement for the CAA section 189(d) attainment control strategy is that it provides for attainment of the NAAQS as expeditiously as practicable.¹⁵⁰ The control strategy must include any additional measures (beyond those already adopted in previous nonattainment plans for the area as RACM/RACT or BACM/BACT) that are needed for the area to attain expeditiously. This includes reassessing any measures previously rejected during the development of any Moderate area or Serious area attainment plan control strategy.¹⁵¹ The state must also demonstrate that it will, at a minimum, achieve an annual five percent reduction in emissions of direct PM_{2.5} or any PM_{2.5} plan precursor from sources

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

¹⁴⁹ The EPA does not normally conduct a separate evaluation to determine whether a Serious area plan's measures also meet the RACM requirements. As explained in the General Preamble Addendum, we interpret the BACM requirement as generally subsuming the RACM requirement—*i.e.*, if we determine that the measures are indeed the “best available,” we have necessarily concluded that they are “reasonably available.” (General Preamble Addendum, 42010). Therefore, a separate analysis to determine if the measures represent a RACM level of control is not necessary. A proposed approval of a Plan's provisions concerning implementation of BACM is also a proposed finding that the Plan provides for the implementation of RACM.

¹⁵⁰ 81 FR 58010, 58100.

¹⁵¹ 40 CFR 50.1010(c)(2)(ii).

in the area, based on the most recent emissions inventory for the area.¹⁵²

In the PM_{2.5} SIP Requirements Rule, the EPA clarified its interpretation of the statutory language in CAA section 189(d) requiring a state to submit a new attainment plan to achieve annual reductions “from the date of such submission until attainment,” to mean annual reductions beginning from the due date of such submission until the new projected attainment date for the area based on the new or additional control measures identified to achieve at least five percent emissions reductions annually.¹⁵³ This interpretation is intended to make clear that even if a state is late in submitting its CAA section 189(d) plan, the area must still achieve its annual five percent emissions reductions beginning from the date by which the state was required to make its CAA section 189(d) submission, not by some later date. Because the deadline for California to submit a section 189(d) plan for the 1997 PM_{2.5} NAAQS in the San Joaquin Valley was December 31, 2016, one year after the December 31, 2015 attainment date for these NAAQS under CAA section 188(c)(2), the starting point for the five percent emissions reduction requirement under section 189(d) for this area is 2017.

2. Summary of the State's Submission and the EPA's Evaluation and Proposed Action

a. Control Strategy

For the Serious area and section 189(d) plan requirements for the 1997 24-hour PM_{2.5} NAAQS the State based the control strategy in the SJV PM_{2.5} Plan on ongoing emissions reductions from baseline control measures.¹⁵⁴ As we use the term here, baseline measures are State and District regulations adopted prior to the development of the SJV PM_{2.5} Plan that continue to achieve emissions reductions through the projected 2020 attainment year for the 1997 24-hour PM_{2.5} NAAQS and beyond. The State describes the baseline measures in the 2018 PM_{2.5} Plan in Chapter 4,¹⁵⁵ Appendix C (“Stationary Source Control Measure Analyses”), and Appendix D (“Mobile Source Control Measure Analyses”). The State incorporates reductions generated by

¹⁵² CAA section 189(d) and 40 CFR 51.1010(c).

¹⁵³ 81 FR 58010, 58101.

¹⁵⁴ Because the 2015 Serious area attainment date has passed, and the EPA found that the area failed to attain by the Serious area attainment date, we are evaluating the control strategy for the Serious area requirements based on the timeline associated with the current section 189(d) projected attainment date of December 31, 2020.

¹⁵⁵ 2018 PM_{2.5} Plan, Chapter 4, Table 4–2.

these baseline measures into the projected baseline inventories and reductions resulting from District measures are individually quantified in Appendix C.

In the 2018 PM_{2.5} Plan, CARB indicates that mobile sources emit over 85 percent of the NO_x emissions in the San Joaquin Valley and that CARB has adopted and amended regulations to reduce public exposure to diesel particulate matter, which includes direct PM_{2.5} and NO_x, from “fuel sources, freight transport sources like heavy-duty diesel trucks, transportation sources like passenger cars and buses, and non-road sources like large construction equipment.”¹⁵⁶

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 or authorization as applicable 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 many such mobile source regulations for which it has issued waiver authorizations as revisions to the California SIP.¹⁵⁷

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.¹⁵⁸

As to stationary and area sources, the SJV PM_{2.5} Plan indicates that regulations adopted for prior attainment plans

¹⁵⁶ 2018 PM_{2.5} Plan, Chapter 4, 4–9. For CARB's BACM analysis for mobile source measures, see 2018 PM_{2.5} Plan, Appendix D, including analyses for on-road light-duty vehicles and fuels (starting on page D–17), on-road heavy-duty vehicles and fuels (starting on page D–35), and non-road sources (starting on page D–64).

¹⁵⁷ For example, see 81 FR 39424 (June 16, 2016); 82 FR 14446 (March 21, 2017); and 83 FR 23232 (May 18, 2018).

¹⁵⁸ For example, see 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), revisions to the California on-road reformulated gasoline and diesel fuel regulations (75 FR 26653, May 12, 2010), and revisions to the California motor vehicle inspection and maintenance program (75 FR 38023, July 1, 2010).

continue to reduce emissions of NO_x and direct PM_{2.5}.¹⁵⁹ Specifically, Table 4–1 of the 2018 PM_{2.5} Plan identifies 33 District measures that limit NO_x and direct PM_{2.5} emissions.¹⁶⁰ The EPA has approved each of the identified measures into the California SIP,¹⁶¹ with two exceptions.

First, the District amended Rule 4905 (“Natural Gas-fired, Fan-type, Residential Central Furnaces”) on October 15, 2020, to extend the period during which manufacturers may pay emissions fees in lieu of meeting the rule’s NO_x emissions limits.¹⁶² CARB submitted the amended rule to the EPA on December 30, 2020,¹⁶³ and the EPA has not yet proposed any action on this submission. The EPA approved a prior version of Rule 4905 into the California SIP on March 29, 2016.¹⁶⁴ 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 emissions limits, emissions reductions associated with the rule’s emissions limits would not be creditable in any attainment plan without additional documentation.¹⁶⁵ Until the District submits the necessary documentation to credit emissions reductions achieved by Rule 4905 toward an attainment control strategy, this rule is not creditable for SIP purposes. The Plan indicates that the District attributed 0.06 tpd of NO_x reductions between 2013 and 2020 to Rule 4905.¹⁶⁶ These emissions reductions have de minimis impacts on the attainment demonstration for the 1997 24-hour PM_{2.5} NAAQS in the SJV PM_{2.5} Plan.

¹⁵⁹ 2018 PM_{2.5} Plan, Chapter 4, 4–3. For the District’s BACM analysis of stationary and area source measures, see 2018 PM_{2.5} Plan, Appendix C.

¹⁶⁰ 2018 PM_{2.5} Plan, Chapter 4, Table 4–1.

¹⁶¹ 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>.

¹⁶² SJVUAPCD, Final Draft Staff Report with Appendix for Proposed Amendments to Rule 4905, “Adopt Proposed Amendments to Rule 4905 (Natural Gas-fired, Fan-type Central Furnaces),” 2.

¹⁶³ Letter dated December 28, 2020, from Richard W. Corey, Executive Officer, CARB, to John Busterud, Regional Administrator, EPA Region 9. CARB’s submittal letter formally withdrew a previously amended version of Rule 4905 adopted by the District on June 21, 2018 and submitted to the EPA by CARB on November 21, 2018.

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

¹⁶⁵ EPA, Region IX Air Division, “Technical Support Document for EPA’s Proposed Rulemaking for the California State Implementation Plan (SIP), San Joaquin Valley Unified Air Pollution Control District’s Rule 4905, Natural Gas-Fired, Fan-Type Central Furnaces,” October 5, 2015, n. 8.

¹⁶⁶ 2018 PM_{2.5} Plan, Appendix C, C–290.

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.¹⁶⁷ 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 direct PM_{2.5} from 2013 through 2020.¹⁶⁸ 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 find that the total emissions reductions attributed to these measures in the future baseline inventories have de minimis effects on the attainment demonstration in the Plan.

b. Best Available Control Measures

We are evaluating the State’s BACM demonstration for the 1997 24-hour PM_{2.5} NAAQS against the section 189(b)(1)(B) Serious area plan BACM requirement, and the section 189(d) plan requirement to address all Serious area plan requirements that the State has not already met. Because we have already found that the State failed to attain the 1997 24-hour PM_{2.5} NAAQS in the San Joaquin Valley area by the Serious area attainment date, and because we have not previously found that the state has met the BACM requirement for purposes of the 1997 24-hour PM_{2.5} NAAQS, we are evaluating the State’s submission against the Serious area BACM requirement in light of the section 189(d) control plan timeline. The State’s BACM demonstration is presented in Appendix C (“Stationary Source Controls”) and Appendix D (“Mobile Source Control Measure Analyses”) of the 2018 PM_{2.5} Plan.¹⁶⁹ As discussed in section IV.A of this proposed rule, Appendix B (“Emissions Inventory”) of the 2018 PM_{2.5} Plan contains the planning inventories for direct PM_{2.5} and all PM_{2.5} precursors (NO_x, SO_x, VOC, and ammonia) for the San Joaquin

¹⁶⁷ The EPA does not have any pending SIP submission for Rule 4203.

¹⁶⁸ 2018 PM_{2.5} Plan, Appendix C, C–46.

¹⁶⁹ Appendices C and D also present an MSM analysis for the purposes of meeting a precondition for an extension of the Serious area attainment date under CAA section 188(e) for the 2006 PM_{2.5} NAAQS. The San Joaquin Valley area is not subject to the MSM requirement for the 1997 24-hour PM_{2.5} NAAQS. Thus, the EPA is evaluating the Plan’s control strategy for implementation of BACM and BACT only.

Valley nonattainment area together with documentation to support these inventories. Each inventory includes emissions from stationary, area, on-road, and non-road emissions sources, and the State specifically identifies the condensable component of direct PM_{2.5} for relevant stationary source and area source categories. As discussed in section IV.B of this proposed rule, the State concludes that the Plan should control emissions of PM_{2.5} and NO_x to reach attainment. Accordingly, the BACM and BACT evaluation in the Plan addresses potential controls for sources of those pollutants.

For stationary and area sources, the District identifies the sources of direct PM_{2.5} and NO_x in the San Joaquin Valley that are subject to District emissions 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 emissions sources, and control measures implemented in other ozone and PM_{2.5} nonattainment areas in California and other states.¹⁷⁰ The District also provides an analysis of several SIP-approved VOC regulations that, according to the District, also provide ammonia co-benefits.¹⁷¹ Based on these analyses, the District concludes that all best available control measures for stationary and area sources are in place in the San Joaquin Valley for NO_x and directly emitted PM_{2.5} for purposes of meeting the BACM/BACT requirement for the 1997 24-hour PM_{2.5} NAAQS. 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 1997 24-hour PM_{2.5} TSD together with recommendations for possible future improvements to these rules.

For mobile sources, CARB identifies the sources of direct PM_{2.5} and NO_x in the San Joaquin Valley that are subject to the State’s emissions 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 San Joaquin

¹⁷⁰ 2018 PM_{2.5} Plan, Chapter 4, section 4.3.1.

¹⁷¹ 2018 PM_{2.5} Plan, Appendix C., section C.25.

Valley, identification of potential control measures for such sources, assessment of the stringency and feasibility of the potential control measures, and adoption and implementation of feasible control measures.¹⁷²

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 1985.¹⁷³

Appendix D of the 2018 PM_{2.5} Plan also describes the current efforts of the eight local jurisdiction metropolitan planning organizations (MPOs) to implement cost-effective transportation control measures (TCMs) in the San Joaquin Valley.¹⁷⁴ TCMs are projects that reduce air pollutants from transportation sources by reducing vehicle use, traffic congestion, or vehicle miles traveled. TCMs are currently being implemented in the San Joaquin Valley as part of the Congestion Mitigation and Air Quality cost effectiveness policy adopted by the eight local jurisdiction MPOs and in the development of each Regional Transportation Plan (RTP). The Congestion Mitigation and Air Quality policy, which is included in a number of the District's prior attainment plan submissions for the ozone and PM_{2.5} NAAQS, provides a standardized

process for distributing 20 percent of the Congestion Mitigation and Air Quality funds to projects that meet a minimum cost effectiveness threshold beginning in fiscal year 2011. The MPOs revisited the minimum cost effectiveness standard during the development of their 2018 RTPs and 2019 Federal Transportation Improvement Program and concluded that they were implementing all reasonable transportation control measures.¹⁷⁵ Appendix D of the District's "2016 Ozone Plan for 2008 8-Hour Ozone Standard," adopted June 16, 2016, contains a listing of adopted TCMs for the San Joaquin Valley.¹⁷⁶

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 1997 24-hour 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 PM_{2.5} NAAQS.¹⁷⁷ We find 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 all reasonable TCMs are being implemented in the San Joaquin Valley 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 both the Serious area and section 189(d) plan requirements.

c. Section 189(d) Five Percent Requirement

The SJV PM_{2.5} Plan's demonstration of annual five percent reductions in NO_x emissions is in section 5.2 of the 2018 PM_{2.5} Plan. As shown in Table 3, the demonstration uses the 2013 base year inventory as the starting point from which the five percent per year emissions reductions are calculated and uses 2017 as the year from which the reductions start. The target required reduction in 2017 is five percent of the base year (2013) inventory, which is a reduction of approximately 15.9 tpd of NO_x, and the targets for subsequent years are additional reductions of five percent per year until the 2020 attainment year. The projected emissions inventories reflect NO_x emissions reductions achieved by baseline control measures and the demonstration shows that these NO_x emissions reductions are greater than the required five percent per year.

TABLE 3—2017–2020 ANNUAL FIVE PERCENT EMISSIONS REDUCTIONS DEMONSTRATION FOR THE SAN JOAQUIN VALLEY

Year	% Reduction from 2013 base year	5% Target (tpd NO _x)	CEPAM inventory v1.05 (tpd NO _x)	Meets 5%?
2013 (base year)			317.3	
2017	5	301.3	233.4	Yes.
2018	10	285.5	221.5	Yes.
2019	15	269.6	214.5	Yes.
2020	20	253.8	203.3	Yes.

Source: 2018 PM_{2.5} Plan, Table 5–2.

The EPA proposes to find that the State's use of 2017 as the starting point from which the five percent per year emissions reductions should begin is reasonable and consistent with the CAA. As discussed in section IV.C.1 of

this document, the EPA interprets the language under CAA section 189(d) to require a state to submit a new attainment plan to achieve annual reductions "from the date of such submission until attainment." The 2018

PM_{2.5} Plan was not submitted until May 10, 2019. However, the Serious area attainment deadline for the San Joaquin Valley nonattainment area for the 1997 PM_{2.5} NAAQS was December 31, 2015.¹⁷⁸ Accordingly, a plan submittal

¹⁷² 2018 PM_{2.5} Plan, Appendix D, Chapter II.

¹⁷³ Id. at Table 17.

¹⁷⁴ Id. at D–127 and D–128.

¹⁷⁵ Id. at D–127.

¹⁷⁶ Id. and SJVUAPCD, "2016 Ozone Plan for 2008 8-Hour Ozone Standard" (adopted June 16,

2016), Appendix D, Attachment D, tables D–10 to D–17.

¹⁷⁷ 85 FR 44192.

¹⁷⁸ 80 FR 18528.

to meet the requirements under section 189(d) was due by December 31, 2016, and reductions were required to occur as of that date. The decline in emissions from 2017 to 2020 shows that reductions did, in fact, occur within the required timeframe. Furthermore, the State's demonstration shows that NO_x emissions reductions from 2017 to 2020 are greater than the required five percent per year. Thus, the EPA proposes to find that the SJV PM_{2.5} Plan meets the CAA 189(d) requirement to provide for an annual reduction in PM_{2.5} or PM_{2.5} precursor emissions of not less than five percent of the amount of such emissions reported in the most recent inventory prepared for the area.

D. Attainment Demonstration and Modeling

1. Statutory and Regulatory Requirements

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 discussed in section IV of this proposal, given that the outermost statutory Serious area attainment date for the San Joaquin Valley area (*i.e.*, December 31, 2015) has passed and that the EPA has already found that the SJV area failed to attain by that date, the EPA must evaluate the State's plan for attainment by a later attainment date. Given that the finding of failure to attain triggered the State's obligation to submit a new plan meeting the requirements of section 189(d), the EPA is evaluating the SJV PM_{2.5} Plan in light of the outermost attainment date required in section 189(d). That section requires that the attainment date be as expeditious as practicable, but not later than five years following the EPA's finding that the area failed to attain the NAAQS by the applicable Serious area attainment date. In this case, the State projected such attainment by December 31, 2020, *i.e.*, by the relevant statutory date.

The PM_{2.5} SIP Requirements Rule explains that the same general requirements that apply to Moderate and Serious area plans under CAA sections 189(a) and 189(b) should apply to plans developed pursuant to CAA section 189(d)—*i.e.*, the plan 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.¹⁷⁹ 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), the five percent per year emissions reductions required by CAA section 189(d), and any other emissions controls that are needed for expeditious attainment of the NAAQS.

The EPA's PM_{2.5} modeling guidance¹⁸⁰ ("Modeling Guidance" and "Modeling Guidance Update") recommends that a photochemical model, such as the Comprehensive Air Quality Model with Extensions (CAMx) or Community Multiscale Air Quality Model (CMAQ), be used to simulate a base case, with meteorological and emissions inputs reflecting a base case year, to replicate concentrations monitored in that year. The model application to the base year undergoes a performance evaluation to ensure that it satisfactorily corroborates the concentrations monitored in that year. The model may then be used to simulate emissions occurring in other years required for a plan, namely the base year (which may differ from the base case year) and future year.¹⁸¹ The modeled response to the emissions changes between those years is used to calculate relative response factors (RRFs) that are applied to the design value in the base year to estimate the projected design value in the future year for comparison against the NAAQS. Separate RRFs are estimated for each chemical species component of PM_{2.5}, and for each quarter of the year, to reflect their differing responses to seasonal meteorological conditions and emissions. Because each species is handled separately, before applying an RRF, the base year design value should be speciated using available chemical

species measurements—that is, each day's measured PM_{2.5} design value must be split into its species components. The Modeling Guidance provides additional detail on the recommended approach.¹⁸²

2. Summary of the State's Submission

As discussed in section IV.C, the SJV PM_{2.5} Plan includes a modeled demonstration projecting that the San Joaquin Valley would attain the 1997 24-hour PM_{2.5} NAAQS by December 31, 2020, based on ongoing emissions reductions from baseline control measures. CARB conducted photochemical modeling with the CMAQ model using inputs developed from routinely available meteorological and air quality data, as well as more detailed and extensive data from the DISCOVER-AQ field study conducted in January and February of 2013.¹⁸³ 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 ("Air Quality Challenges and Trends") and the modeling results in Chapter 5.3 ("Attainment Demonstration and Modeling") of the 2018 PM_{2.5} Plan. The State provides a conceptual model of PM_{2.5} formation in the San Joaquin Valley as part of the modeling protocol in Appendix L ("Modeling Protocol"). Appendix J ("Modeling Emission Inventory") describes emissions input preparation procedures. The State presents additional relevant information in Appendix C ("Weight of Evidence Analysis") of the CARB Staff Report, which includes ambient trends and other data in support of the attainment demonstration.

CARB's air quality modeling approach investigated the many inter-connected facets of modeling ambient PM_{2.5} in the San Joaquin Valley, including model input preparation, model performance evaluation, use of the model output for the numerical NAAQS attainment test, and modeling documentation. Specifically, this required the development and evaluation of a conceptual model, modeling protocol, episode (*i.e.*, base year) selection, modeling domain, CMAQ model selection, initial and boundary condition procedures, meteorological

¹⁸⁰ Memorandum dated November 29, 2018, from Richard Wayland, Air Quality Assessment Division, Office of Air Quality Planning and Standards, 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, Office of Air Quality Planning and Standards, EPA, to Regional Air Program Managers, EPA, Subject: "Update to the 24 Hour PM_{2.5} NAAQS Modeled Attainment Test," ("Modeling Guidance Update").

¹⁸¹ 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.

¹⁸² Modeling Guidance, section 4.5, "What is the Recommended Modeled Attainment Test for the 24-Hour NAAQS."

¹⁸³ NASA, "Deriving Information on Surface Conditions from Column and Vertically Resolved Observations Relevant to Air Quality," available at https://www.nasa.gov/mission_pages/discover-aq/index.html.

¹⁷⁹ 40 CFR 51.1011(b)(1); 81 FR 58010, 58102.

model choice and performance, modeling emissions inventory preparation procedures, model performance, attainment test procedure, adjustments to baseline air quality for modeling, the 2020 attainment test, and an unmonitored area analysis. CARB’s supplemental weight of evidence analysis further supports the Plan’s demonstration of attainment by the end of 2020. These analyses are generally consistent with the EPA’s recommendations in the Modeling Guidance.

The model performance evaluation in Appendix K includes statistical and graphical measures of model performance. The magnitude and timing of predicted concentrations of total PM_{2.5}, as well as of its ammonium and nitrate components, generally match the occurrence of elevated PM_{2.5} levels in the measured observations. A comparison to other recent modeling efforts shows good model performance on bias, error, and correlation with

measurements, for total PM_{2.5} and for most of its chemical components. The Weight of Evidence Analysis shows the downward trend in NO_x emissions along with a 70 percent decrease between 1999 and 2017 in the number of days above the 1997 24-hour PM_{2.5} NAAQS.¹⁸⁴ The analysis also shows decreases in daily PM_{2.5} concentrations during winter, and in the frequency of high PM_{2.5} concentrations generally.¹⁸⁵ Available ambient air quality data show that total PM_{2.5} and ammonium nitrate concentrations have declined over the 2004–2017 period, despite some increases from time to time.¹⁸⁶ These trends show that there has been an improvement in air quality due to emissions reductions in the San Joaquin Valley, although that point is not fully reflected in the 98th percentile statistic, which is the basis for the regulatory design value.

The State conducted three CMAQ¹⁸⁷ simulations: (1) A 2013 base year simulation to demonstrate that the

model reasonably reproduced the observed PM_{2.5} concentrations in the San Joaquin Valley; (2) a 2013 baseline year simulation that was the same as the 2013 base year simulation but excluded exceptional event emissions, such as wildfire emissions; and (3) a 2020 future year simulation that reflects projected emissions growth and reductions due to controls that have already been adopted and implemented.¹⁸⁸

Table 4 shows the 2013 base year and 2020 projected future year 24-hour PM_{2.5} design values at monitoring sites in the San Joaquin Valley. 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, to minimize the influence of year-to-year variability. The highest 2020 projected design value is 47.6 µg/m³ at the Bakersfield–California monitoring site, which is below the 65 µg/m³ level of the 1997 24-hour PM_{2.5} NAAQS.

TABLE 4—PROJECTED FUTURE 24-HOUR PM_{2.5} DESIGN VALUES AT MONITORING SITES IN THE SAN JOAQUIN VALLEY (µg/m³)

Monitoring site	2013 Base design value	2020 Projected design value
Bakersfield—California	64.1	47.6
Fresno-Garland	60.0	44.3
Hanford	60.0	43.7
Fresno-Hamilton & Winery	59.3	45.6
Clovis	55.8	41.1
Visalia	55.5	42.8
Bakersfield-Planz	55.5	41.2
Madera	51.0	38.9
Turlock	50.7	37.8
Modesto	47.9	35.8
Merced-M. Street	46.9	32.9
Stockton	42.0	33.5
Merced-S Coffee	41.1	30.0
Manteca	36.9	30.1
Tranquility	29.5	21.5

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

3. The EPA’s Review of the State’s Submission

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 preamble, we are proposing to approve the emissions inventories on which the SJV PM_{2.5} Plan’s attainment demonstration and related provisions

are based. Furthermore, 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 find that the analyses are consistent with the EPA’s guidance on modeling for PM_{2.5} attainment planning purposes. Based on these reviews, we find that the modeling in the Plan is adequate for the purposes of supporting the RFP demonstration and demonstration of attainment by 2020 and are proposing to approve the air

quality modeling. For further detail, see the EPA’s February 2020 Modeling TSD.

Second, we must find that the SIP submittal provides for expeditious attainment through the timely implementation of the control strategy. As discussed in section IV.C of this preamble, we are proposing to approve the control strategy in the SJV PM_{2.5} Plan, including the BACM/BACT demonstration and the five percent emissions reduction requirement under CAA sections 189(b)(1)(B) and 189(d), respectively.

¹⁸⁴ Weight of Evidence Analysis, 27–28, Figure 14, and Figure 24.

¹⁸⁵ Id. at Figure 16 and Figure 17.

¹⁸⁶ Id. at Figure 21.

¹⁸⁷ CMAQ Version 5.0.2.

¹⁸⁸ 2018 PM_{2.5} Plan, 5–5.

Third, the EPA must find that the emissions reductions that are relied on for attainment in the SIP submission are creditable. As discussed in section IV.C.2.a, the SJV PM_{2.5} Plan relies principally on rules that have already been adopted and approved by the EPA to achieve the emissions reductions needed to attain the 1997 24-hour PM_{2.5} NAAQS in the San Joaquin Valley. We present our evaluation of the rules in section IV.C.2.a and in sections II and III of the EPA's 1997 24-hour PM_{2.5} TSD. We find that all but two of these rules are SIP-creditable and that the total emissions reductions attributed to the two measures that are not SIP-creditable have de minimis impacts on the attainment demonstration in the Plan.

The EPA has also reviewed ambient monitoring data recorded at air quality monitors throughout the San Joaquin Valley PM_{2.5} nonattainment area during the three years leading up to the projected December 31, 2020 attainment date (*i.e.*, 2018–2020). As discussed in section V of this proposal, based on these data, we are proposing to find that the San Joaquin Valley area attained the 1997 24-hour PM_{2.5} NAAQS by the December 31, 2020 attainment date.

Based on these evaluations, we propose to determine that the SJV PM_{2.5} Plan provides for attainment of the 1997 24-hour PM_{2.5} NAAQS by the most expeditious date practicable, consistent with the requirements of CAA section 189(d). Furthermore, because the 2015 Serious area attainment date has passed, and the EPA found that the area failed to attain by the Serious area attainment date, we are evaluating the State's compliance with the Serious area plan requirements in light of the attainment date required under CAA section 189(d).¹⁸⁹ Thus, we are also proposing to determine that the Plan meets the Serious area attainment plan requirement under CAA section 189(b)(1)(A).

E. Reasonable Further Progress and Quantitative Milestones

1. Statutory and Regulatory Requirements

CAA section 172(c)(2) provides that all nonattainment area plans shall require RFP toward attainment. In addition, CAA section 189(c) requires that all PM_{2.5} nonattainment area SIPs include quantitative milestones to be achieved every three years until the area is redesignated to attainment and that demonstrate RFP. Section 171(l) of the Act defines RFP as “such annual incremental reductions in emissions of

the relevant air pollutant as are required by [Part D] or may reasonably be required by the Administrator for the purpose of ensuring attainment of the applicable [NAAQS] by the applicable date.” Neither subpart 1 nor subpart 4 of part D, title I of the Act requires that states achieve a set percentage of emissions reductions in any given year for purposes of satisfying the RFP requirement. For purposes of the PM_{2.5} NAAQS, the EPA has interpreted the RFP requirement to require that the nonattainment area plans show annual incremental emissions reductions sufficient to maintain generally linear progress toward attainment by the applicable deadline.¹⁹⁰

Attainment plans for PM_{2.5} nonattainment areas should include detailed schedules for compliance with emissions regulations in the area and provide corresponding annual emissions reductions to be achieved by each milestone in the schedule.¹⁹¹ 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_{2.5} earlier to provide greater public health benefits.¹⁹²

The PM_{2.5} SIP Requirements Rule establishes specific regulatory requirements for purposes of satisfying the Act's RFP requirements and provides 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 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.¹⁹³ Additionally, states should estimate the RFP projected emissions for each quantitative milestone year by sector on a pollutant-by-pollutant basis.¹⁹⁴

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 NAAQS consistent with RFP requirements. Because RFP is an annual emissions 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 states to submit milestone reports (due 90 days after each milestone), and these reports should include calculations and any assumptions made by the state concerning how RFP has been met, *e.g.*, through quantification of emissions reductions to date.¹⁹⁵

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.¹⁹⁶ In keeping with this historical approach, the EPA established December 31, 2014, the deadline that the EPA established for a state's submission of any additional attainment-related SIP elements necessary to satisfy the subpart 4 Moderate area requirements for the 1997 PM_{2.5} NAAQS, as the starting point for the first three-year period under CAA section 189(c) for the 1997 PM_{2.5} NAAQS in the San Joaquin Valley.¹⁹⁷

¹⁹³ 40 CFR 51.1012(a).

¹⁹⁴ 81 FR 58010, 58056.

¹⁹⁵ General Preamble Addendum, 42016–42017.

¹⁹⁶ General Preamble, 13539, and General Preamble Addendum, 42016.

¹⁹⁷ 79 FR 31566 (final rule establishing subpart 4 moderate area classifications and deadline for

¹⁹⁰ General Preamble Addendum, 42015.

¹⁹¹ *Id.* at 42016.

¹⁹² *Id.*

¹⁸⁹ See CAA section 179(d); 40 CFR 51.1004(a)(3).

Under the PM_{2.5} SIP Requirements Rule, each attainment plan submission for an area designated nonattainment for the 1997 PM_{2.5} NAAQS before January 15, 2015, must contain quantitative milestones to be achieved no later than three years after December 31, 2014, and every three years thereafter until the milestone date that falls within three years after the applicable attainment date.¹⁹⁸ If the area fails to attain, this post-attainment date milestone provides the EPA with the tools necessary to monitor the area's continued progress toward attainment while the state develops a new attainment plan.¹⁹⁹ Quantitative milestones must provide for objective evaluation of RFP 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.²⁰⁰

Because the EPA designated the San Joaquin Valley area as nonattainment for the 1997 24-hour PM_{2.5} NAAQS effective April 5, 2005,²⁰¹ the plan for this area must contain quantitative milestones to be achieved no later than three years after December 31, 2014 (*i.e.*, by December 31, 2017), and every three years thereafter until the milestone date that falls within three years after the applicable attainment date.²⁰² For a Serious area attainment plan with a statutory attainment date of December 31, 2015, the relevant quantitative milestone year is December 31, 2017. However, as discussed in section III, the area did not attain by the statutory Serious area attainment date and evaluating reasonable further progress toward that date does not make sense. We are therefore evaluating the Serious area obligations based on the attainment date the State must meet in a plan required under CAA section 189(d).²⁰³ To meet CAA section 189(d), the SJV PM_{2.5} Plan includes a demonstration that the area will attain by December 31, 2020. Therefore, in accordance with 40 CFR 51.1013(a)(4), the attainment plan for this area must contain quantitative

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

¹⁹⁸ 40 CFR 51.1013(a)(4).

¹⁹⁹ 81 FR 58010, 58064.

²⁰⁰ *Id.* at 58064 and 58092.

²⁰¹ 70 FR 944.

²⁰² 40 CFR 51.1013(a)(4).

²⁰³ See CAA section 179(d); 40 CFR 51.1004(a)(3).

milestones to be achieved no later than December 31, 2017, December 31, 2020, and December 31, 2023.

2. Summary of the 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 1997 24-hour PM_{2.5} NAAQS,²⁰⁴ and the Valley State SIP Strategy contains the control measure commitments that CARB has identified as mobile source quantitative milestones for the 2020 milestone date.²⁰⁵ Given the State's conclusions that ammonia, SO_x, and VOC emissions do not contribute significantly to PM_{2.5} levels that exceed the 1997 24-hour PM_{2.5} NAAQS in the San Joaquin Valley, 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.²⁰⁶ Similarly, the State developed quantitative milestones based upon implementation of control strategy measures in the adopted SIP and in the SJV PM_{2.5} Plan that achieve reductions in emissions of direct PM_{2.5} and NO_x.²⁰⁷ For the 1997 24-hour PM_{2.5} NAAQS, the RFP analysis in the Plan shows generally linear progress toward attainment.

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

Reasonable Further Progress

The State addresses 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 2020 attainment year, and beyond to the 2023 post-attainment quantitative milestone year. The Plan's emissions inventory shows that direct PM_{2.5} and NO_x are emitted by a large number and range of sources in the San Joaquin Valley. Table

²⁰⁴ As discussed in footnote 34, all references to Appendix H in this proposed rule are to the revised version submitted on February 11, 2020, which replaces the version submitted with the 2018 PM_{2.5} Plan on May 10, 2019.

²⁰⁵ Valley State SIP Strategy, Table 7 (identifying State measures scheduled for action between 2017 and 2020, *inter alia*) and CARB Resolution 18–49, "San Joaquin Valley Supplement to the 2016 State Strategy for the State Implementation Plan" (October 25, 2018), 5 (adopting State commitment to begin public processes and propose for Board 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 therein).

²⁰⁶ SJV PM_{2.5} Plan, Appendix H, H–1.

²⁰⁷ *Id.* at H–18 and H–19 (District milestones) and H–21 and H–22 (State milestones).

H–2 in Appendix H contains an anticipated implementation schedule for District regulatory control measures and Table 4–8 in Chapter 4 of the 2018 PM_{2.5} Plan contains an anticipated implementation schedule for CARB control measures in the San Joaquin Valley. Table H–5 in Appendix H contains projected emissions for each quantitative milestone year. These emissions levels reflect baseline emissions projections through the 2023 post-attainment milestone year.²⁰⁸

The SJV PM_{2.5} Plan identifies emissions reductions needed for attainment of the 1997 24-hour PM_{2.5} NAAQS by 2020,²⁰⁹ and identifies San Joaquin Valley's progress toward attainment in each milestone year.²¹⁰ The State and District set RFP targets for each of the quantitative milestone years as shown in Table H–8 of Appendix H of the 2018 PM_{2.5} Plan.

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 2020 attainment year. Based on these analyses, the State and District conclude that the adopted control strategy is adequate to meet the RFP requirement for the 1997 24-hour PM_{2.5} NAAQS.

Quantitative Milestones

Appendix H of the 2018 PM_{2.5} Plan identifies the milestone dates of December 31, 2017, December 31, 2020, and December 31, 2023, for the 1997 PM_{2.5} NAAQS.²¹¹ 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,²¹² and State and District control measures that will achieve emissions reductions in the years leading up to each of the milestones, in accordance with the control strategy in the Plan.²¹³

The Plan includes quantitative milestones for mobile, stationary, and area sources. For mobile sources, CARB has developed quantitative milestones that provide for an evaluation of RFP based on the implementation of specific control measures by the relevant three-year milestones. For each quantitative milestone year, the Plan provides for evaluating RFP by tracking State and District implementation of regulatory measures and SIP commitments during the three-year period leading to each

²⁰⁸ *Id.* at tables H–3 to H–5.

²⁰⁹ *Id.* at Table H–6.

²¹⁰ *Id.* at Table H–7.

²¹¹ *Id.* at Table H–12.

²¹² *Id.* at Table H–8.

²¹³ *Id.* at H–18 and H–19 (District milestones) and H–21 and H–22 (State milestones).

milestone date, consistent with the control strategy in the SJV PM_{2.5} Plan.²¹⁴ The identified regulatory measures include State measures for light-duty vehicles and non-road vehicles and several District measures for stationary and area sources.²¹⁵

CARB submitted its 2017 Quantitative Milestone Report for the San Joaquin Valley to the EPA on December 20, 2018.²¹⁶ The report includes a certification that CARB and the District met the 2017 quantitative milestones identified in the SJV PM_{2.5} Plan for the 1997 PM_{2.5} NAAQS and discusses the State's and District's progress on implementing the three CARB measures and six District measures identified in Appendix H as quantitative milestones for the 2017 milestone year. On February 15, 2021, the EPA determined that the 2017 Quantitative Milestone Report was adequate.²¹⁷ In our evaluation of the 2017 Quantitative Milestone Report, we found that the control measures in the Plan are in effect, consistent with the RFP demonstration in the SJV PM_{2.5} Plan for the 1997 24-hour PM_{2.5} NAAQS, but we noted that the determination of adequacy did not constitute approval of any component of the SJV PM_{2.5} Plan.²¹⁸

3. The EPA's Review of the State's Submission

The RFP demonstration in the SJV PM_{2.5} Plan identifies quantitative milestone dates (*i.e.*, December 31 of 2017, 2020, and 2023) that are consistent with the requirements of 40 CFR 51.1013(a)(4) and presents projected RFP emissions levels for direct PM_{2.5} and NO_x to be achieved by these milestone dates based on the implementation schedule for existing control measures in the area (*i.e.*, baseline measures). The projected emissions levels based on the implementation schedule in the Plan

demonstrate that the control strategy will achieve direct PM_{2.5} and NO_x emissions reductions at rates representing generally linear progress towards attainment between the 2013 baseline year and the 2020 attainment year. The target emissions levels and associated control requirements provide for objective evaluation of the area's progress towards attainment of the 1997 24-hour PM_{2.5} NAAQS.

The State's quantitative milestones in Appendix H are to implement specific measures listed in the State's control measure commitments that apply to heavy-duty trucks and buses, light-duty vehicles, and non-road equipment sources and may provide substantial reductions in emissions of direct PM_{2.5} and NO_x from mobile sources in the San Joaquin Valley. Similarly, the District's quantitative milestones in Appendix H are to implement specific measures listed in the District's control measure commitments that apply to sources such as residential wood burning, commercial charbroiling, glass melting furnaces, and internal combustion engines, and that may provide substantial reductions in emissions of direct PM_{2.5} and NO_x from stationary sources. These milestones provide an objective means for tracking the State's and District's progress in implementing their respective control strategies and, thus, provide for objective evaluation of the San Joaquin Valley's progress toward timely attainment.

For these reasons, we propose to determine that the SJV PM_{2.5} Plan satisfies the requirements for RFP in CAA section 172(c)(2) and 40 CFR 51.1012 and for quantitative milestones in CAA section 189(c) and 40 CFR 51.1013 for the 1997 24-hour PM_{2.5} NAAQS in the San Joaquin Valley for purposes of both the Serious area and CAA section 189(d) attainment plans. Because we are proposing to determine that the San Joaquin Valley has attained the 1997 24-hour PM_{2.5} NAAQS by the December 31, 2020 attainment date, as discussed in section V of this proposed rule, we are also proposing to determine that the requirement for a post-attainment milestone will no longer apply in the San Joaquin Valley nonattainment area for these NAAQS. As described in section IV.E.1 above, the purpose of the post-attainment quantitative milestone is to provide the EPA with the tools necessary to monitor the area's continued progress toward attainment in the event the area fails to attain by the attainment date.²¹⁹ Once an area has attained the NAAQS, "no further milestones are necessary or

meaningful."²²⁰ Similarly, the section 189(c)(2) requirement to submit a quantitative milestone report no longer applies when the area has attained the standard.²²¹ Accordingly, upon a final determination that the San Joaquin Valley area has attained the 1997 24-hour PM_{2.5} NAAQS by the attainment date, the post-attainment RFP milestone will no longer have purpose and the EPA is proposing to find that the requirement will no longer apply to the San Joaquin Valley. If we finalize this action as proposed, the State will no longer be required to submit a quantitative milestone report for the San Joaquin Valley under 40 CFR 51.1013(b) for the purposes of the 2023 post-attainment milestone year identified in the Plan for the 1997 24-hour PM_{2.5} NAAQS.

F. Contingency Measures

1. Requirements for Contingency Measures

Under CAA section 172(c)(9), each state required to make a nonattainment plan SIP submission must include, in such plan, contingency measures to be implemented if an 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 SIP; (2) to meet any quantitative milestone in the approved SIP; (3) to submit a required quantitative milestone report; or (4) to attain the applicable PM_{2.5} NAAQS by the applicable attainment date.²²² Contingency measures must be fully adopted rules or control measures that are ready to be implemented quickly upon failure to meet RFP or failure of the area to meet the relevant NAAQS by the applicable attainment date.²²³

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 level of emissions reductions that implementation of contingency measures must achieve, but the EPA recommends that contingency measures provide for emissions reductions

²¹⁴ Id. We note that the District's identified quantitative milestones for 2023 appear to contain a typographical error, as they include a District report on "[t]he status of SIP measures adopted between 2017 and 2020 as per the schedule included in the adopted Plan." Id. at H-18 and H-19. We understand that the District intended to refer here to the status of SIP measures adopted between 2020 and 2023, consistent with the schedule in the 2018 PM_{2.5} Plan.

²¹⁵ Id. at H-18 and H-19 (District milestones), and H-21 and H-22 (State milestones).

²¹⁶ Letter dated December 20, 2018, from Richard W. Corey, Executive Officer, CARB, to Michael Stoker, Regional Administrator, EPA Region IX, with attachment "2017 Quantitative Milestone Report for the 1997 and 2006 NAAQS."

²¹⁷ Letter dated February 15, 2021, from Deborah Jordan, Acting Regional Administrator, EPA Region IX, to Richard W. Corey, Executive Officer, CARB, with enclosure titled "EPA Evaluation of 2017 Quantitative Milestone Report."

²¹⁸ Id.

²¹⁹ 81 FR 58010, 58064.

²²⁰ 75 FR 13710, 13713 (March 23, 2010).

²²¹ Id.

²²² 40 CFR 51.1014(a).

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

equivalent to approximately one year of reductions needed for RFP in the nonattainment area at issue, 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.²²⁴

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 nonattainment 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). In a 2016 decision called *Bahr v. EPA* (“*Bahr*”),²²⁵ the Ninth Circuit Court of Appeals rejected the EPA’s interpretation of CAA section 172(c)(9) to allow approval of already-implemented control measures as contingency measures. In *Bahr*, the Ninth Circuit concluded that contingency measures must be measures that are triggered and implemented only after the EPA determines that an area failed to meet RFP requirements or to attain by the applicable attainment date. Thus, within the geographic jurisdiction of the Ninth Circuit, already implemented measures cannot serve as contingency measures under CAA section 172(c)(9).²²⁶ To comply with section 172(c)(9), a state must develop, adopt, and submit a contingency measure to be triggered upon a failure to meet an RFP milestone, failure to meet a quantitative milestone requirement, or failure to attain the NAAQS by the applicable attainment date.

2. Summary of the State’s Submission

The SJV PM_{2.5} Plan addresses the contingency measure requirement for the 1997 24-hour PM_{2.5} NAAQS in section 5.6 and Appendix H (specifically, section H.3 (“Contingency Measures”)) of the 2018 PM_{2.5} Plan. The Plan relies on revisions to the District’s wood-burning rule (Rule 4901) and refers to a SIP revision submitted by CARB on October 23, 2017, titled “State

Implementation Plan Attainment Contingency Measures for the San Joaquin Valley 15 µg/m³ Annual PM_{2.5} NAAQS” (“2017 Contingency Measure SIP”).²²⁷ On March 19, 2021, CARB withdrew the 2017 Contingency Measure SIP submission.²²⁸ Therefore, we are not evaluating the 2017 Contingency Measure SIP as part of this action.

With respect to the District contingency measure, the 2018 PM_{2.5} Plan states that the District will amend Rule 4901 to include a requirement that would be triggered upon a determination by the EPA that the San Joaquin Valley failed to meet a regulatory requirement necessitating implementation of a contingency measure.²²⁹ The District adopted amendments to Rule 4901 on June 20, 2019, including a contingency measure in section 5.7.3 of the amended rule (more details below). In the EPA’s July 22, 2020 final action to approve Rule 4901, as amended June 20, 2019, we did not evaluate section 5.7.3 of the amended rule for compliance with CAA requirements for contingency measures.²³⁰ On July 22, 2021, the EPA proposed to find that the contingency provision of Rule 4901 (section 5.7.3) does not satisfy the CAA requirements for contingency measures for the 1997 annual PM_{2.5} NAAQS and proposed to remove the provision from the SIP because it is severable from the remainder of Rule 4901.²³¹ In this action, we evaluate section 5.7.3 of Rule 4901 for compliance with the contingency measures requirements for purposes of the 1997 24-hour PM_{2.5} NAAQS.

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 San Joaquin Valley. 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 µg/m³ and 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 San Joaquin Valley—those levels remain 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 determination that the San Joaquin Valley has failed to attain the 1997, 2006, or 2012 PM_{2.5} NAAQS by the applicable attainment date, the PM_{2.5} curtailment levels of 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 of direct PM_{2.5} would be in the range of 0.014 tpd (if the contingency measure is triggered in Kings County but not the other non-hot spot counties) to 0.387 tpd (if the contingency measure 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 1997 24-hour PM_{2.5} NAAQS by the attainment date, violations of the 1997 24-hour PM_{2.5}

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

²²⁵ *Bahr v. EPA*, 836 F.3d 1218, 1235–1237 (9th Cir. 2016).

²²⁶ See also *Sierra Club v. EPA*, 985 F.3d 1055 (D.C. Cir. 2021) and *Assoc. of Irrigated Residents v. EPA*, No. 19–71223, slip op. (9th Cir. Aug 26, 2021).

²²⁷ Letter dated October 23, 2017, from Richard W. Corey, Executive Officer, CARB, to Alexis Strauss, Acting Regional Administrator, EPA Region 9.

²²⁸ Letter dated March 19, 2021, from Richard W. Corey, Executive Officer, CARB, to Deborah Jordan, Acting Regional Administrator, EPA Region 9, transmitting CARB Executive Order S–21–004.

²²⁹ 2018 PM_{2.5} Plan, Appendix H, H–25.

²³⁰ 85 FR 44206 (final approval of Rule 4901); 85 FR 1131, 1132–1133 (January 9, 2020) (proposed approval of Rule 4901).

²³¹ 86 FR 38652.

NAAQS are observed only at monitors in the hot spot counties.²³² The corresponding potential NO_x emissions reduction would be in the range of 0.002 tpd to 0.060 tpd, respectively, but once again, there would be no emissions reduction if the violations are monitored in the hot spot counties only.²³³ The EPA has already approved Rule 4901, as amended in 2019, as a revision to the California SIP.²³⁴

3. The EPA's Review of the State's Submission

As noted above, the EPA previously proposed to find that the contingency provision of Rule 4901 (section 5.7.3) does not satisfy the CAA requirements for contingency measures for the 1997 annual PM_{2.5} NAAQS.²³⁵ As part of that proposal, the EPA found that the measure meets some, but not all, of the applicable requirements for contingency measures under CAA section 172(c)(9) and 40 CFR 51.1014. One of the deficiencies outlined in our proposal was that the contingency provisions of Rule 4901 do not address the potential for State failures to meet RFP, to meet a quantitative milestone, or to submit a quantitative milestone report. In addition, the contingency measure provisions of Rule 4901 are not structured to achieve any additional emissions reductions if the EPA were to find that the monitoring locations in the "hot spot" counties (*i.e.*, Fresno, Kern, or Madera) are the only counties in the San Joaquin Valley that are violating the 1997 24-hour 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; however, the contingency provisions of Rule 4901 provide for such reductions only under certain circumstances.

Consistent with our proposal for the 1997 annual PM_{2.5} NAAQS and for these same reasons, we are proposing to disapprove the contingency measure element of the SJV PM_{2.5} Plan for the 1997 24-hour PM_{2.5} NAAQS as not meeting the requirements of 172(c)(9) and 40 CFR 51.1014 for Serious area and section 189(d) attainment plans. However, the EPA is also proposing to find that the contingency measures are no longer required for the San Joaquin

Valley nonattainment area for the 1997 24-hour PM_{2.5} NAAQS, for the reasons discussed below.

Attainment contingency measures under 172(c)(9) are triggered upon the EPA's determination that an area failed to attain a given NAAQS by its applicable attainment date. CAA section 179(c) requires the EPA to determine whether the area attained the NAAQS by its applicable attainment date. As part of this proposed action, we are proposing to determine that the San Joaquin Valley nonattainment area attained the 1997 24-hour PM_{2.5} NAAQS by the December 31, 2020 attainment date projected by the Plan. Based on our proposed finding of attainment by the applicable attainment date, we are also proposing to determine that the CAA requirement for the SIP to provide for attainment contingency measures will no longer apply to the San Joaquin Valley for the 1997 24-hour PM_{2.5} NAAQS. Under CAA section 172(c)(9), attainment contingency measures are implemented only if the area fails to attain by the attainment date. Therefore, if we finalize the determination that the San Joaquin Valley nonattainment area has attained the 1997 24-hour PM_{2.5} NAAQS, attainment contingency measures for this NAAQS would never be required to be implemented. Because there are no circumstances under which CAA section 172(c)(9) attainment contingency measures could ever be triggered, we think it is a reasonable interpretation of the CAA that these measures are no longer required to be submitted.²³⁶

Similarly, we are proposing to find that, upon finalization of the determination of attainment by the attainment date, the RFP related contingency measure requirement (*i.e.*, for failure to meet RFP, to submit a quantitative milestone report, or to meet the quantitative milestone) would also no longer apply to the San Joaquin Valley nonattainment area for the 1997 24-hour PM_{2.5} NAAQS. The purpose of the RFP and related quantitative milestone requirements under the CAA is to "ensure[e] attainment of the applicable [NAAQS] by the applicable date."²³⁷ Because the sole purpose of RFP contingency measures is to provide continued progress if an area fails to meet its RFP or quantitative milestone requirements, a final determination of attainment by the attainment date serves as demonstration that RFP requirements for the area have been met, and that there is no need for any later

quantitative milestone or milestone report, and thus the RFP related contingency measures are no longer needed. Accordingly, because we are proposing to determine that the San Joaquin Valley has attained the 1997 24-hour PM_{2.5} NAAQS by the December 31, 2020 attainment date, and that therefore the RFP and quantitative milestone requirements would no longer apply, we are now also proposing to determine that RFP contingency measures are no longer required for this area.²³⁸

Under section 179(a) of the CAA, final disapproval of a SIP submission that addresses a requirement of part D, title I of the CAA, or is required in response to a finding of substantial inadequacy as described in CAA section 110(k)(5) (SIP Call), starts sanctions clocks. The SJV PM_{2.5} Plan, including the contingency measure element, does address requirements of part D. However, if we finalize our determinations that the requirements for contingency measures no longer apply to the San Joaquin Valley nonattainment area for the 1997 24-hour PM_{2.5} NAAQS, then the contingency measure element of the SJV PM_{2.5} Plan would no longer be required to address any part D requirement for the 1997 24-hour PM_{2.5} NAAQS. Therefore, final disapproval of the contingency measure element of the SJV PM_{2.5} Plan would not trigger sanctions clocks. Similarly, final disapproval would not trigger any obligation for the EPA to promulgate a federal implementation plan (FIP) under CAA section 110(c) because there would be no deficiency for such a FIP to correct.²³⁹

Because we are proposing to approve the RFP analysis, the modeled attainment demonstration, and the motor vehicle emissions budgets, we are also proposing to issue a protective finding under 40 CFR 93.120(a)(3) in the event we finalize the disapproval of the

²³⁸ With respect to the 2017 RFP contingency measure requirement specifically, we note that, as explained in section IV.E.2 of this proposed rule, on December 20, 2018, CARB submitted a quantitative milestone report demonstrating that the 2017 quantitative milestones in the SJV PM_{2.5} Plan have been achieved, and the EPA has determined that this milestone report is adequate. Because the State and District have demonstrated that the San Joaquin Valley area has met its 2017 quantitative milestones, RFP contingency measures for the 2017 milestone year would never be triggered.

²³⁹ This is the case for both the Serious area plan and the section 189(d) plan. Because the purpose of contingency measures is to ensure continued progress toward attainment in the event that an area fails to attain the NAAQS or meet RFP requirements, and we are proposing to find that the area has met the 1997 24-hour PM_{2.5} NAAQS, there is no purpose to triggering sanction and FIP obligations for the State to submit measures to achieve the goal of attaining the 1997 24-hour PM_{2.5} NAAQS when this goal has already been met.

²³² See Table B-13 in Appendix B from the District's Final Staff Report (June 20, 2019) for revisions to Rule 4901.

²³³ 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, page 8, of the District's Final Staff Report (June 20, 2019) for revisions to Rule 4901.

²³⁴ 85 FR 44206.

²³⁵ 86 FR 38652.

²³⁶ See *Bahr v. Regan*, No. 20-70092, (9th Cir. July 28, 2021), slip op. 45-51.

²³⁷ CAA section 171(c).

contingency measures. Without a protective finding, the final disapproval would result in a conformity freeze, under which only projects in the first four years of the most recent conforming Regional Transportation Plan (RTP) and Transportation Improvement Programs (TIPs) can proceed. During a freeze, no new RTPs, TIPs, or RTP/TIP amendments can be found to conform.²⁴⁰ Under this protective finding, however, the final disapproval of the contingency measures does not result in a transportation conformity freeze in the San Joaquin Valley PM_{2.5} nonattainment area.

If the State chooses to withdraw the contingency measure element with respect to the 1997 24-hour PM_{2.5} NAAQS prior to our final action on the SJV PM_{2.5} Plan for that NAAQS, we would take no final action either to approve or to disapprove that element.

G. Motor Vehicle Emission Budgets

1. Statutory and Regulatory Requirements

Section 176(c) of the CAA requires federal actions in nonattainment and maintenance areas to conform to the goals of the state's SIP to eliminate or reduce the severity and number of violations of the NAAQS and achieve timely attainment of the NAAQS. Conformity to the SIP's goals means that such actions will not: (1) Cause or contribute to violations of a NAAQS, (2) worsen the severity of an existing violation, or (3) delay timely attainment of any NAAQS or any interim milestone.

Actions involving Federal Highway Administration (FHWA) or Federal Transit Administration (FTA) funding or approval are subject to the EPA's transportation conformity rule, codified at 40 CFR part 93, subpart A. Under this rule, metropolitan planning organizations (MPOs) in nonattainment and maintenance areas coordinate with state and local air quality and transportation agencies, the EPA, the FHWA, and the FTA to demonstrate that an area's regional transportation plans (RTPs) and transportation improvement programs 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 emission budgets (MVEBs or "budgets") contained in all control strategy SIPs. 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.²⁴¹

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.²⁴² For an area designated nonattainment for the 1997 PM_{2.5} NAAQS before January 15, 2015, the attainment plan must contain quantitative milestones to be achieved no later than three years after December 31, 2014, and every three years thereafter until the milestone date that falls within three years after the applicable attainment date.²⁴³ As the EPA explained in the preamble to the PM_{2.5} SIP Requirements Rule, it is important to include a post-attainment year quantitative milestone to ensure that, if the area fails to attain by the attainment date, the EPA can continue to monitor the area's progress toward attainment while the state develops a new attainment plan.²⁴⁴ Although the post-attainment year quantitative milestone is a required element of a Serious area plan, it is not necessary to demonstrate transportation conformity for 2023 or to use the 2023 budgets in transportation conformity determinations until such time as the area fails to attain the 1997 24-hour PM_{2.5} NAAQS.

PM_{2.5} plans should identify budgets for direct PM_{2.5}, NO_x, and all other PM_{2.5} precursors for which on-road emissions are determined to significantly contribute to PM_{2.5} levels in the area for each RFP milestone year and the attainment year, if the plan demonstrates attainment. All direct PM_{2.5} SIP budgets should include direct PM_{2.5} motor vehicle emissions from tailpipes, brake wear, and tire wear. With respect to PM_{2.5} from re-entrained road dust and emissions of VOC, 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.²⁴⁵

By contrast, transportation conformity requirements apply with respect to emissions of NO_x unless both the EPA Regional Administrator and the director of the state air agency have made a finding that transportation-related emissions of NO_x within the nonattainment area are not a significant contributor to the PM_{2.5} nonattainment problem and have so notified the MPO and DOT, or the applicable implementation plan (or implementation plan submission) does not establish an approved (or adequate) budget for such emissions as part of the RFP, attainment, or maintenance strategy.²⁴⁶

It is not always necessary for states to establish motor vehicle emissions budgets for all 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 such precursor(s).

Alternatively, the transportation conformity regulations contain criteria for determining whether emissions of one or more PM_{2.5} precursors are insignificant for transportation conformity purposes.²⁴⁷ For a pollutant or precursor to be considered an insignificant contributor based on the transportation conformity rule's criteria, the control strategy SIP must demonstrate that it would be unreasonable to expect that such an area would experience enough motor vehicle emissions growth in that pollutant and/or precursor for a NAAQS violation to occur. Insignificance determinations are based on factors such as air quality, SIP motor vehicle control measures, trends

²⁴¹ 40 CFR 93.118(e)(4)(v).

²⁴² 40 CFR 51.1012(a), 51.1013(a)(1).

²⁴³ 40 CFR 51.1013(a)(4) and 81 FR 58010, 58058 and 58063–58064. Because the area has failed to attain the 1997 24-hour PM_{2.5} NAAQS by the Serious area attainment date, and it would serve no purpose for the plan to include budgets for the EPA to evaluate conformity for the dates associated with the Serious area attainment date, the applicable attainment date for the purposes of our evaluation is the section 189(d) projected attainment date of December 31, 2020.

²⁴⁴ 81 FR 58010, 58063–58064.

²⁴⁵ 40 CFR 93.102(b)(3), 93.102(b)(2)(v), and 93.122(f); see also Conformity Rule preambles at 69 FR 40004, 40031–40036 (July 1, 2004), 70 FR 24280, 24283–24285 (May 6, 2005) and 70 FR 31354 (June 1, 2005).

²⁴⁶ 40 CFR 93.102(b)(2)(iv).

²⁴⁷ 40 CFR 93.109(f).

²⁴⁰ 40 CFR 93.120(a)(2).

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 rationale for providing for insignificance determinations is described in the July 1, 2004 revision to the Transportation Conformity Rule.²⁴⁸

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 emissions 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 budget during a public comment period; and (3) making a finding of adequacy or

inadequacy. The EPA can notify the public by either posting an announcement that the EPA has received SIP budgets on the EPA’s adequacy website,²⁴⁹ 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.²⁵⁰

2. Summary of the State’s Submission

The 2018 PM_{2.5} Plan includes budgets for direct PM_{2.5} and NO_x emissions, calculated using annual average daily emissions, for 2017, 2020, and 2023 (RFP milestone year, attainment year, and post-attainment quantitative milestone year, respectively).²⁵¹ The Plan establishes separate direct PM_{2.5} and NO_x subarea budgets for each county, and partial county (for Kern County), in the San Joaquin Valley.²⁵² CARB calculated the budgets using EMFAC2014, CARB’s latest version of the EMFAC model for estimating emissions from on-road vehicles operating in California that was available at the time of Plan

development, and the latest modeled vehicle miles traveled and speed distributions from the San Joaquin Valley MPOs from the Final 2017 Federal Transportation Improvement Program, adopted in September 2016. The budgets reflect annual average emissions because those emissions are linked with the District’s attainment demonstration for the 1997 24-hour 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.²⁵³ 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, but the Plan does include a discussion of the significance/ insignificance factors for re-entrained road dust.²⁵⁴ The budgets included in the 2018 PM_{2.5} Plan for purposes of the 1997 24-hour PM_{2.5} NAAQS are shown in Table 8.

TABLE 8—MOTOR VEHICLE EMISSION BUDGETS FOR THE SAN JOAQUIN VALLEY FOR THE 1997 24-HOUR PM_{2.5} NAAQS
(Annual average, tpd)

County	2017 (RFP year)		2020 (Attainment year)		2023 (Post-attainment year)	
	PM _{2.5}	NO _x	PM _{2.5}	NO _x	PM _{2.5}	NO _x
Fresno	0.9	28.5	0.9	25.3	0.8	15.1
Kern	0.8	28.0	0.8	23.3	0.7	13.3
Kings	0.2	5.8	0.2	4.8	0.2	2.8
Madera	0.2	5.3	0.2	4.2	0.2	2.5
Merced	0.3	10.7	0.3	8.9	0.3	5.3
San Joaquin	0.7	14.9	0.6	11.9	0.6	7.6
Stanislaus	0.4	11.9	0.4	9.6	0.4	6.1
Tulare	0.4	10.8	0.4	8.5	0.4	5.2

Source: 2018 PM_{2.5} Plan, Appendix D, Table 3–1. Budgets are rounded to the nearest tenth of a ton.

The State did not include budgets for VOC, SO₂, or ammonia. As discussed in section IV.B of this preamble, the State submitted a PM_{2.5} precursor demonstration documenting its conclusion that control of these precursors would not significantly contribute to attainment of the 1997 24-hour PM_{2.5} NAAQS, and the EPA is proposing to approve the precursor demonstration. Therefore, if the EPA approves the demonstration, the State would not be required to submit budgets for these precursors. The State included a discussion of the significance/ insignificance factors for ammonia, SO₂,

and VOC to demonstrate a finding of insignificance under the transportation conformity rule.²⁵⁵

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.²⁵⁶

Conformity Trading Mechanism

The 2018 PM_{2.5} Plan also includes a proposed trading mechanism for transportation conformity analyses that would allow future decreases in NO_x

emissions from on-road mobile sources to offset any on-road increases in direct PM_{2.5} emissions. The State is proposing to use a 2 to 1 NO_x to PM_{2.5} ratio for the 1997 24-hour PM_{2.5} NAAQS. This ratio was derived by performing a sensitivity analysis based on a 30 percent reduction of NO_x or PM_{2.5} emissions and calculating the corresponding effect on design values at sites in Bakersfield and Fresno.

To ensure that the trading mechanism does not affect the ability of the San Joaquin Valley to meet the NO_x budget, the NO_x emissions reductions available to supplement the PM_{2.5} budget would

²⁴⁸ 69 FR 40004.

²⁴⁹ 40 CFR 93.118(f)(1).

²⁵⁰ 40 CFR 93.118(f)(2).

²⁵¹ 2018 PM_{2.5} Plan, Appendix D, Table 3–1.

²⁵² 40 CFR 93.124(c) and (d).

²⁵³ 2018 PM_{2.5} Plan, Appendix D, D–122 and D–123.

²⁵⁴ Id. at D–121 and D–122.

²⁵⁵ 40 CFR 93.109(f).

²⁵⁶ Letter dated May 9, 2019, from Richard W. Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region 9, 3.

only be those remaining after the NO_x budget has been met.²⁵⁷ The Plan also provides that the San Joaquin Valley MPOs shall clearly document the calculations used in the trading, along with any additional reductions of NO_x and PM_{2.5} emissions in the conformity analysis.

3. The EPA's Review of the State's Submission

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

Based on our proposal to approve the State's demonstration that emissions of ammonia, SO₂, and VOCs do not contribute significantly to PM_{2.5} levels that exceed the 1997 24-hour PM_{2.5} NAAQS in the San Joaquin Valley, as discussed in section IV.B of this proposal, 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 1997 24-hour PM_{2.5} NAAQS in the San Joaquin Valley. Based on the information about re-entrained road dust in the Plan and in accordance with 40 CFR 93.102(b)(3), the EPA proposes to find that it is not necessary to include re-entrained road dust emissions in the budgets for 1997 24-hour PM_{2.5} NAAQS in the San Joaquin Valley.

For the reasons discussed in sections IV.D and IV.E of this proposed rule, the EPA is proposing to approve the attainment and RFP demonstrations, respectively, in the SJV PM_{2.5} Plan. The 2017 RFP and 2020 attainment year budgets, as shown in Table 8 of this preamble, are consistent with these demonstrations, are clearly identified and precisely quantified, and meet all other applicable statutory and regulatory requirements including the

adequacy criteria in 40 CFR 93.118(e)(4). For these reasons, the EPA proposes to approve the 2017 and 2020 budgets listed in Table 8.²⁵⁸ We provide a more detailed discussion in section IV of the EPA's 1997 24-hour PM_{2.5} TSD. The budgets that the EPA is proposing to approve relate only to the 1997 24-hour PM_{2.5} NAAQS, and our proposed approval does not affect the status of the budgets for the 1997 annual PM_{2.5} NAAQS or the previously-approved MVEBs for the 2006 PM_{2.5} NAAQS and related trading mechanism, which remain in effect for that PM_{2.5} NAAQS.

Although the post-attainment year quantitative milestone is a required element of the Serious area plan, it is not necessary to demonstrate transportation conformity for 2023 or to use the 2023 budgets in transportation conformity determinations until such time as the area fails to attain the 1997 24-hour PM_{2.5} NAAQS. As discussed in section V of this document, the EPA is proposing to find that the San Joaquin Valley area has attained the 1997 24-hour PM_{2.5} NAAQS. The EPA does not believe that it is necessary to demonstrate conformity using post-attainment year budgets in areas that attain by the attainment date. Therefore, if the EPA finalizes the determination that the San Joaquin Valley area attained by the December 31, 2020 attainment date, the requirement for post-attainment year budgets will no longer apply in the area for the 1997 24-hour PM_{2.5} NAAQS.

As noted above, the State included a trading mechanism to be used in transportation conformity analyses that would be used in conjunction with the budgets in the 2018 PM_{2.5} Plan, as allowed for under 40 CFR 93.124(b). This trading mechanism would allow future decreases in NO_x emissions from on-road mobile sources to offset any on-road increases in PM_{2.5}, using a 2 to 1 NO_x to PM_{2.5} ratio for the 1997 24-hour PM_{2.5} NAAQS. To ensure that the trading mechanism does not affect the ability to meet the NO_x budget, the Plan provides that the NO_x emissions reductions available to supplement the PM_{2.5} budget would only be those remaining after the NO_x budget has been met. The San Joaquin Valley MPOs will have to document clearly the calculations used in the trading when demonstrating conformity, along with any additional reductions of NO_x and PM_{2.5} emissions in the conformity analysis. The trading calculations must

be performed prior to the final rounding to demonstrate conformity with the budgets.

The EPA has reviewed the trading mechanism as described on pages D-125 to D-127 in Appendix D of the 2018 PM_{2.5} Plan and finds it is appropriate for transportation conformity purposes in the San Joaquin Valley for the 1997 24-hour PM_{2.5} NAAQS. The methodology for estimating the trading ratio for conformity purposes is essentially an update (based on newer modeling) of the approach that the EPA previously approved for the 2008 PM_{2.5} Plan for the 1997 PM_{2.5} NAAQS²⁵⁹ and the 2012 PM_{2.5} Plan for the 2006 24-hour PM_{2.5} NAAQS.²⁶⁰ 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} emissions 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 NAAQS and modeled only transportation related sources in the nonattainment area. The ratio the State is proposing to use for transportation conformity purposes is derived from air quality modeling that evaluated the effect of reductions in transportation-related NO_x and PM_{2.5} emissions in the San Joaquin Valley on ambient concentrations at the Bakersfield-California Avenue, Bakersfield-Planz, Fresno-Garland, and Fresno-Hamilton & Winery monitoring sites. The modeling that the State performed to evaluate the effectiveness of NO_x and PM_{2.5} reductions on ambient 24-hour concentrations showed NO_x to PM_{2.5} ratios that range from a high of 2.3 at the Bakersfield-California Avenue monitor to a low of 1.6 at the Fresno-Hamilton & Winery monitor.²⁶¹ In our July 22, 2020 action on the 2018 PM_{2.5} Plan for the 2006 PM_{2.5} NAAQS, we found that the State's approach is a reasonable method to use to develop ratios for transportation conformity purposes and approved the 2 to 1 NO_x to PM_{2.5} trading mechanism as an enforceable component of the transportation conformity program for the San Joaquin Valley for the 2006 PM_{2.5} NAAQS.²⁶² Here, we similarly find that the State's approach is reasonable and propose to

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

²⁶⁰ 81 FR 59876 (August 31, 2016).

²⁶¹ 2018 PM_{2.5} Plan, Appendix D, D-126.

²⁶² 85 FR 44192.

²⁵⁷ 2018 PM_{2.5} Plan, Appendix D, D-126 and D-127.

²⁵⁸ Although we are proposing to approve the 2017 budgets, we note that these budgets would not be used in any future transportation conformity determinations because the Plan contains budgets for 2020.

approve the 2 to 1 NO_x to PM_{2.5} trading ratio.

If approved, this trading ratio will replace the 9 to 1 NO_x to PM_{2.5} trading ratio approved for the San Joaquin Valley for analysis years after 2014 for the 1997 24-hour PM_{2.5} NAAQS.²⁶³

Under the transportation conformity rule, once budgets are approved, they cannot be superseded by revised budgets submitted for the same CAA purpose and the same year(s) addressed by the previously approved SIP until the EPA approves the revised budgets as a SIP revision. In other words, as a general matter, such approved budgets cannot be superseded by revised budgets found adequate, but rather only through approval of the revised budgets, unless the EPA specifies otherwise in its approval of a SIP by limiting the duration of the approval to last only until subsequently submitted budgets are found adequate.²⁶⁴

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.²⁶⁵ The transportation conformity rule allows us to limit the approval of budgets.²⁶⁶ However, we will consider a state's request to limit an approval of its budgets only if the request includes the following elements:²⁶⁷

(1) An acknowledgement and explanation as to why the budgets under consideration have become outdated or deficient;

(2) A commitment to update the budgets as part of a comprehensive SIP update; and

(3) A request that the EPA limit the duration of its approval to the period before new budgets have been found to be adequate for transportation conformity purposes.

CARB's request includes an explanation for why the budgets have become, or will become, outdated or deficient. In short, CARB has requested that we limit the duration of the approval of the budgets in light of the EPA's approval of EMFAC2017, an updated version of the model (EMFAC2014) used for the budgets in the SJV PM_{2.5} Plan.²⁶⁸ EMFAC2017

updates vehicle mix and emissions data of the previously approved version of the model, EMFAC2014.

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

We note that CARB has not committed to update the budgets as part of a comprehensive SIP update, but as a practical matter, CARB must submit a SIP revision that includes updated demonstrations as well as the updated budgets to meet the adequacy criteria in 40 CFR 93.118(e)(4).²⁶⁹ Therefore, we do not need a specific commitment for such a plan at this time. For the reasons provided above, and in light of CARB's explanation for why the budgets will become outdated and should be replaced upon an adequacy finding for updated budgets, we propose to limit the duration of our approval of the budgets addressed in this action to the period before we find revised budgets based on EMFAC2017 to be adequate.

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

CAA section 189(e) 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 NAAQS in the area.²⁷⁰ 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

latest update to the EMFAC model for use by the State and local governments to meet CAA requirements. 84 FR 41717.

²⁶⁹ Under 40 CFR 93.118(e)(4), the EPA will not find a budget in a submitted SIP to be adequate unless, among other criteria, the budgets, when considered together with all other emissions sources, are consistent with applicable requirements for RFP and attainment. 40 CFR 93.118(e)(4)(iv).

²⁷⁰ General Preamble, 13539 and 13541–13542.

of a nonattainment NSR permit program meeting the requirements of CAA sections 172(c)(5) and 189(b)(3). As part of our April 7, 2015 final action to reclassify the San Joaquin Valley area as Serious nonattainment for the 1997 PM_{2.5} standards, we established a May 7, 2016 deadline for the State to submit nonattainment NSR SIP revisions addressing the requirements of CAA sections 189(b)(3) and 189(e) of the Act for the 1997 PM_{2.5} NAAQS.²⁷¹

California submitted nonattainment NSR SIP revisions to address the subpart 4 requirements for the San Joaquin Valley Serious PM_{2.5} nonattainment area on November 20, 2019.²⁷² We are not proposing any action on this submission at this time. We will act on this submission through a separate rulemaking, as appropriate.

V. Determination of Attainment by the Attainment Date

A. Requirements for Attainment Determinations

Sections 179(c)(1) and 188(b)(2) of the CAA require the EPA to determine whether a state with a PM_{2.5} nonattainment area attained the applicable PM_{2.5} NAAQS by the applicable attainment date, based on the area's air quality as of the attainment date. A determination of whether an area's air quality currently meets the PM_{2.5} NAAQS is generally based upon the most recent three years of complete, quality-assured data gathered at established State and Local Air Monitoring Stations (SLAMS) in a nonattainment area and entered into the EPA's Air Quality System (AQS) database. Data from ambient air monitors operated by state/local agencies in compliance with the EPA monitoring requirements must be submitted to AQS. Monitoring agencies annually certify that these data are accurate to the best of their knowledge. Accordingly, the EPA relies primarily on data in AQS when determining the attainment status of areas.²⁷³ The EPA reviews all data to determine the area's air quality status in accordance with 40 CFR part 50, Appendix N.

Under EPA regulations in 40 CFR 50.7 and in accordance with Appendix N, the 1997 24-hour PM_{2.5} NAAQS are met when the design value is less than or equal to 65 µg/m³ (based on the rounding convention in 40 CFR part 50,

²⁷¹ 80 FR 18528, 18533.

²⁷² Letter dated November 15, 2019, from Richard W. Corey, Executive Officer, CARB, to Michael Stoker, Regional Administrator, EPA Region IX.

²⁷³ See 40 CFR 50.7; 40 CFR part 50, Appendix L; 40 CFR part 53; 40 CFR part 58, and 40 CFR part 58, appendices A, C, D, and E.

²⁶³ 76 FR 69896.

²⁶⁴ 40 CFR 93.118(e)(1).

²⁶⁵ Letter dated May 9, 2019, from Richard W. Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region 9, 3.

²⁶⁶ 40 CFR 93.118(e)(1).

²⁶⁷ 67 FR 69139 (November 15, 2002), limiting our prior approval of MVEBs in certain California SIPs.

²⁶⁸ On August 15, 2019, the EPA approved and announced the availability of EMFAC2017, the

Appendix N) at each eligible monitoring site within the area. Data completeness requirements for a given year are met when at least 75 percent of the scheduled sampling days for each quarter have valid data.²⁷⁴

B. Monitoring Network Considerations

Section 110(a)(2)(B)(i) of the CAA requires states to establish and operate air monitoring networks to compile data on ambient air quality for all criteria pollutants. The monitoring requirements are specified in 40 CFR part 58. These requirements are applicable to state, and where delegated, local air monitoring agencies that operate criteria pollutant monitors. The regulations in 40 CFR part 58 establish specific requirements for operating air quality surveillance networks to measure ambient concentrations of PM_{2.5}, including requirements for measurement methods, network design, quality assurance procedures, and in the case of large urban areas, the minimum number of monitoring sites designated as SLAMS.

In section 4.7 of Appendix D to 40 CFR part 58, the EPA specifies minimum monitoring requirements for PM_{2.5} to operate at SLAMS. SLAMS produce data comparable to the NAAQS, and therefore, the monitor must be an approved federal reference method (FRM), federal equivalent method (FEM), or approved regional method (ARM). The minimum number of SLAMS required is described in section 4.7.1 and can be met by either filter-based or continuous FRMs or FEMs. The monitoring regulations also provide that each core-based statistical area (CBSA) must operate a minimum number of PM_{2.5} continuous monitors;²⁷⁵ however, this requirement can be met by either an FEM or a non-FEM continuous monitor, and the continuous monitors can be located with other SLAMS or at a different location. Consequently, the monitoring requirements for PM_{2.5} can be met with filter-based FRMs/FEMs, continuous FEMs, continuous non-FEMs, or a combination of monitors at each required SLAMS.

Under 40 CFR 58.10, states are required to submit annual monitoring network plans to the EPA.²⁷⁶ Within the San Joaquin Valley, CARB and the District are the agencies responsible for assuring that the area meets air quality monitoring requirements. CARB and SJVUAPCD submit monitoring network plans to the EPA annually. These plans

describe and discuss the status of the air monitoring network, as required under 40 CFR 58.10. The EPA reviews these annual network plans for compliance with the applicable reporting requirements in 40 CFR part 58. With respect to PM_{2.5}, we have found that the CARB and SJVUAPCD annual network plans meet the applicable requirements under 40 CFR part 58.²⁷⁷

During the 2018–2020 period, PM_{2.5} ambient concentration data that are eligible for use in determining whether an area has attained the PM_{2.5} NAAQS were collected at a total of 18 sites within the San Joaquin Valley: 5 sites in Fresno County; 3 sites in Kern County; 2 sites each in Kings, Merced, San Joaquin, and Stanislaus counties; and 1 site each in Madera and Tulare counties. The District operates 12 of these sites while CARB operates 6 of these sites. All of the sites are designated SLAMS for PM_{2.5}.²⁷⁸ The primary monitors are FRMs at 5 of the 18 sites and beta attenuation monitor FEMs at 13 of the 18 sites. Overall, the District's PM_{2.5} monitoring network meets, and in several Metropolitan Statistical Areas (MSAs) exceeds, the PM_{2.5} minimum monitoring requirements for the San Joaquin Valley.

Based on our review of the PM_{2.5} monitoring network as summarized above, we find that the monitoring network in the San Joaquin Valley is adequate for the purpose of collecting ambient PM_{2.5} concentration data for use in determining whether the San Joaquin Valley attained the 1997 24-hour PM_{2.5} NAAQS by the December 31, 2020 attainment date.

²⁷⁷ Letter dated November 5, 2018, from Gwen Yoshimura, Manager, Air Quality Analysis Office, EPA Region IX, to Sheraz Gill, Deputy Air Pollution Control Office, SJVUAPCD; letter dated November 6, 2019, from Gwen Yoshimura, Manager, Air Quality Analysis Office, EPA Region IX, to Jon Klassen, Director of Strategies and Incentives, SJVUAPCD; letter dated October 26, 2020, from Gwen Yoshimura, Manager, Air Quality Analysis Office, EPA Region IX, to Jon Klassen, Director of Strategies and Incentives, SJVUAPCD; letter dated November 26, 2018, from Gwen Yoshimura, Manager, Air Quality Analysis Office, EPA Region IX, to Ravi Ramalingam, Chief, Consumer Products and Air Quality Assessment Branch, CARB; letter dated November 26, 2019, from Gwen Yoshimura, Manager, Air Quality Analysis Office, EPA Region IX, to Ravi Ramalingam, Chief, Consumer Products and Air Quality Assessment Branch, CARB; and letter dated November 5, 2020, from Gwen Yoshimura, Manager, Air Quality Analysis Office, EPA Region IX, to Ravi Ramalingam, Chief, Consumer Products and Air Quality Assessment Branch, CARB.

²⁷⁸ There are a number of other PM_{2.5} monitoring sites within the valley, including other sites operated by the District, the National Park Service, and certain Indian tribes, but the data collected from these sites are non-regulatory and not eligible for use in determining whether the San Joaquin Valley has attained the PM_{2.5} NAAQS.

C. Data Considerations and Proposed Determination

Under 40 CFR 58.15, monitoring agencies must certify, on an annual basis, that data collected at all SLAMS and at all FRM, FEM, and ARM SPM stations meet the EPA's quality assurance requirements. In doing so, monitoring agencies must certify that the previous year of ambient concentration and quality assurance data are submitted to AQS and that the ambient concentration data are accurate. CARB annually certifies that the data the agency submits to AQS are quality assured, including the data collected at monitoring sites in the San Joaquin Valley.²⁷⁹ SJVUAPCD does the same for data submitted to AQS from monitoring sites operated by the District.²⁸⁰

As noted above, CAA sections 179(c)(1) and 188(b)(2) require the EPA to determine whether a PM_{2.5} nonattainment area attained the applicable PM_{2.5} NAAQS by the applicable attainment date, based on the area's air quality as of the attainment date. The SJV PM_{2.5} Plan includes a modeled demonstration of attainment by December 31, 2020, for the 1997 24-hour PM_{2.5} NAAQS. Thus, the EPA's evaluation of whether the San Joaquin Valley PM_{2.5} nonattainment area has attained the 1997 24-hour PM_{2.5} NAAQS is based on our review of the monitoring data recorded during the three years preceding the attainment date (2018–2020). Our review also takes into account the adequacy of the PM_{2.5} monitoring network in the nonattainment area and the reliability of the data collected by the network as discussed in the previous sections of this document.

With respect to data completeness, we determined that the data collected by CARB and the District meet the quarterly completeness criterion for all 12 quarters of the three-year period at most of the PM_{2.5} monitoring sites in the San Joaquin Valley. More specifically, among the 18 PM_{2.5} monitoring sites from which regulatory data are available, the data from 5 of the sites did not meet the 75 percent completeness criterion (for each quarter); however, the data from all but 3 sites (Fresno–

²⁷⁹ For example, see letter dated June 21, 2021, from Sylvia Vanderspek, Chief, Air Quality Planning Branch, CARB, to Gwen Yoshimura, Manager, Air Quality Analysis Office, EPA Region 9, with enclosures, certifying calendar year 2020 ambient air quality data and quality assurance data.

²⁸⁰ For example, see letter dated June 22, 2021, from Jessica Olsen, Program Manager, SJVUAPCD, to Elizabeth Adams, Director, Air and Radiation Division, EPA Region IX, with attachments, certifying calendar year 2020 ambient air quality data and quality assurance data.

²⁷⁴ 40 CFR part 50, Appendix N, section 4.2(b).

²⁷⁵ 40 CFR part 58, Appendix D, section 4.7.2.

²⁷⁶ 40 CFR 58.10(a)(1).

Foundry (AQS ID: 06-019-2016), Manteca (AQS ID: 06-077-2010), and Clovis-Villa (AQS ID: 06-019-5001)) are sufficient nonetheless to produce a valid design value for the 1997 24-hour PM_{2.5} NAAQS pursuant to the rules governing design value validity in 40 CFR part 50, Appendix N, section 4.2. We note that monitors with incomplete data in one or more quarters may still produce valid design values if the conditions for applying the EPA's data substitution test are met.²⁸¹ The Bakersfield-Airport (Planz) (AQS ID: 06-029-0016) and Hanford-Irwin (AQS ID: 06-031-1004) monitoring sites had incomplete data in the 4th quarter and 3rd quarter of 2018, respectively; however, both sites had between 50 and 75 percent data completeness for these quarters and have valid design values after applying the maximum quarterly value data substitution test.

The Manteca monitoring site recorded data amounting to less than 75 percent completeness during the 1st, 2nd, and 3rd quarters of 2019 (61 percent, 66 percent, and 67 percent, respectively) due to ongoing instrument operational issues. Under Appendix N, section 4.2(b) data shall be considered valid, in spite of quarters with incomplete data, if the resulting annual 98th percentile value or resulting 24-hour NAAQS design value exceeds the standard. Here, the incomplete annual 98th percentile value, 26.8 µg/m³, is well below the standard, and the resulting design value for the site, 59 µg/m³, is also below the standard. Therefore, this provision of section 4.2(b) does not validate the 2019 Manteca monitoring site data. Like Bakersfield-Airport (Planz) and Hanford-Irwin, the data for the Manteca site qualify for the maximum quarterly value data substitution test under 40 CFR part 50, Appendix N, section 4.2(c). However, upon applying the data substitution test to the Manteca monitoring site data, we find that the data do not pass the test (*i.e.*, after substituting the highest reported daily maximum PM_{2.5} value for a quarter for all missing daily data in the matching deficient quarter, the resulting test design value was above the 1997 24-hour PM_{2.5} NAAQS). Because the data substitution test results in a test design value above the NAAQS, the Manteca monitoring site 2019 design value is considered invalid. The EPA then reviewed additional information about the monitoring network and air quality data, including historical 24-hour PM_{2.5} design value trends, to assess if the data collection deficiency, in the context of

data that otherwise show attainment, precludes the EPA from determining that the San Joaquin Valley area attained the 1997 24-hour PM_{2.5} NAAQS during the 2018-2020 period.

First, although the 2019 data were incomplete, the available data that were collected over a substantial amount of the year show zero exceedances of the NAAQS.

Second, the Manteca monitoring site has not historically been the 24-hour PM_{2.5} design value site for the San Joaquin Valley area. For example, the Bakersfield-California (AQS ID: 06-029-0014) monitoring site was the design value site for the 24-hour PM_{2.5} NAAQS for 2011 to 2013, the Bakersfield-Airport (Planz) monitoring site was the design value site in 2014, the Corcoran-Patterson (AQS ID: 06-031-0004) monitoring site was the design value site from 2015 to 2019, and the Modesto-14th Street (AQS ID: 06-099-0005) monitoring site was the design value site in 2020.

Third, an assessment of long-term trends at the Manteca monitoring site and nearby monitoring sites shows nearby sites have design values below the 24-hour PM_{2.5} NAAQS and the Manteca site typically has lower design values compared to nearby sites. For example, during the 2013 to 2020 period, the Manteca monitoring site had consistently lower design values for the 24-hour PM_{2.5} NAAQS than the Stockton-Hazelton (AQS ID: 06-077-1002) and Modesto-14th Street monitoring sites, which are located approximately 11 miles and 18 miles, respectively, from the Manteca monitoring site. The Stockton-Hazelton and Modesto-14th Street monitoring sites have complete annual 24-hour design values that are below the 1997 24-hour PM_{2.5} NAAQS (after excluding monitored exceedances associated with the August 20-24, 2020 wildfire exceptional event, as discussed below) and provide an appropriate comparison and characterization of air quality for the areas surrounding the Manteca monitoring site. Thus, because the data that were collected provide a 98th percentile value below the standard, and the Manteca monitoring site has historically lower design value concentrations relative to the 24-hour PM_{2.5} NAAQS and design values at nearby locations, we find that the incomplete data should not preclude the EPA from determining that the San Joaquin Valley area has attained the 1997 24-hour PM_{2.5} NAAQS.

The remaining two sites, Fresno-Foundry and Clovis-Villa, recorded data amounting to less than 50 percent completeness during multiple quarters

during the 2018-2020 period.

Specifically, the Fresno-Foundry monitoring site recorded less than 50 percent data capture during all four quarters of 2018 and 2019 and the Clovis-Villa monitoring site recorded less than 50 percent data capture during the 2nd and 4th quarters of 2019. Thus, the data in these quarters are not eligible for the maximum quarterly value data substitution test under the provisions in 40 CFR part 50 Appendix N, section 4.2(c)(i), which state that if any quarter has less than 50 percent data capture, then the required test conditions are not met and the substitution test cannot be used. Additionally, the data collected at these sites did not result in an 98th percentile value or resulting 24-hour NAAQS design value that exceeds the standard under the provision of Appendix N section 4.2(b). Therefore, the design values at these two sites are considered invalid. However, the EPA reviewed historical 24-hour PM_{2.5} design value trends and the causes of the incomplete data in the context of data that otherwise show attainment, and found that the data collection deficiency should not preclude a determination that the San Joaquin Valley area attained the 1997 24-hour PM_{2.5} NAAQS during the 2018-2020 period.

The Fresno-Foundry monitoring site began operation on January 1, 2020. Although data completeness was 98 percent for year 2020, the data completeness requirements for the 2018-2020 period are not met since the site was not yet operational and thus data were not collected in 2018 and 2019. Because the incomplete data at the Fresno-Foundry monitoring site is due to the site having only begun operation in 2020, the incomplete data should not preclude the EPA from determining whether the area has attained the NAAQS. Upon excluding monitored exceedances associated with the August 20-24, 2020 wildfire exceptional event, as discussed below, the Fresno-Foundry monitoring site has an incomplete 2020 design value of 64 µg/m³, which is below the level of the 1997 24-hour PM_{2.5} NAAQS.

The Clovis-Villa monitoring site recorded less than 75 percent data capture during the 2nd, 3rd, and 4th quarters of 2019 (48 percent, 66 percent, and 41 percent, respectively) due to ongoing instrument operational issues. Because the data substitution test under 40 CFR part 50, Appendix N, section 4.2(c) requires each quarter to have data completeness of at least 50 percent, the Clovis-Villa 2019 data do not qualify for the data substitution test. Like Manteca, the Clovis-Villa site has not historically

²⁸¹ See 40 CFR part 50, Appendix N, section 4.2(b).

been the 24-hour PM_{2.5} design value site. An assessment of long-term trends at the Clovis–Villa monitoring site and a nearby monitoring site shows that the Clovis–Villa site has historically had design values below the 24-hour PM_{2.5} NAAQS and has had lower design values compared to the nearby site. During the 2011 to 2019 period, the Clovis–Villa monitoring site consistently had lower design values for the 24-hour PM_{2.5} NAAQS than the Fresno–Garland monitoring site, which is located approximately four miles from Clovis–Villa.²⁸² The Fresno–Garland site has a complete 2020 annual 24-hour design value below the 1997 24-hour PM_{2.5} NAAQS and provides an appropriate comparison and characterization of air quality for the area surrounding the Clovis–Villa monitoring site. Furthermore, the District exceeds the PM_{2.5} minimum monitoring requirements for three PM_{2.5} SLAMs monitors in the Fresno MSA as

they are currently operating five SLAMs monitors.

Thus, based on the historical design value concentrations at the Clovis–Villa monitoring site relative to the 24-hour PM_{2.5} NAAQS and the nearest site, we find that the incomplete data at the Clovis–Villa monitoring site should not preclude the EPA from determining the San Joaquin Valley area has attained the 1997 24-hour PM_{2.5} NAAQS.

Table 5 shows the 24-hour PM_{2.5} design values at each of the 18 SLAMs monitoring sites within the San Joaquin Valley nonattainment area for the most recent three-year period (2018–2020). The data indicate that the San Joaquin Valley area likely experienced higher than normal PM_{2.5} concentrations in 2018 and 2020 due to wildfire impacts during the summer and fall months.²⁸³ Table 5 shows that 98th percentile concentrations at all 18 monitors in the San Joaquin Valley area with data spanning 2018 to 2020 are significantly higher in 2018 and 2020 relative to

concentrations in 2019, again, likely due to the wildfires in those years.

Accordingly, the 2018–2020 design values in Table 5 may also be higher than normal at certain monitoring sites due to potential wildfire impacts within the 2018–2020 data period.

Nevertheless, the data show that the 24-hour design value for the 2018–2020 period was equal to or less than 65 µg/m³ (i.e., the level of the 1997 24-hour PM_{2.5} NAAQS) at all monitors after excluding monitored exceedances specifically associated with the August 20–24, 2020 wildfire exceptional event, as discussed below. Therefore, we are proposing to determine, based on complete (or otherwise not inconsistent, as described above), quality-assured, and certified data for 2018–2020, that the San Joaquin Valley area has attained the 1997 24-hour PM_{2.5} NAAQS, consistent with attainment of the standard projected by the State in the SJV PM_{2.5} Plan.

TABLE 5—2018–2020 24-HOUR PM_{2.5} DESIGN VALUES FOR THE SAN JOAQUIN VALLEY NONATTAINMENT AREA

County	General location site	AQS ID	98th percentile (µg/m ³)			2018–2020 24-hour design values (µg/m ³)
			2018	2019	2020	
Fresno	Fresno—Pacific	06–019–5025	65.5	37.1	81.0	61.
	Fresno—Garland	06–019–0011	63.5	36.9	85.0	62.
	Fresno—Foundry	06–019–2016	Inc	Inc	63.9	64 (Inv). ^a
	Clovis—Villa	06–019–5001	57.0	28.0 (Inc)	99.5	62 (Inv). ^b
	Tranquillity	06–019–2009	51.4	17.1	92.5	54.
Kern	Bakersfield—Airport (Planz)	06–029–0016	60.8	46.7	57.1	55.
	Bakersfield—California Ave	06–029–0014	69.2	43.4	79.2	64.
	Bakersfield—Golden State Highway	06–029–0010	60.9	44.3	76.9	61.
Kings	Corcoran—Patterson	06–031–0004	78.0	45.1	69.0	64.
	Hanford—Irwin	06–031–1004	78.2	41.1	72.6	64.
Madera	Madera—Avenue 14	06–039–2010	50.2	23.9	87.7	54.
Merced	Merced—M Street	06–047–2510	52.7	29.5	77.1	53.
	Merced—Coffee	06–047–0003	56.0	23.4	78.3	53.
San Joaquin	Stockton—Hazelton	06–077–1002	92.3	32.9	65.9	64.
	Manteca	06–077–2010	84.6 ^c	26.8 (Inc)	66.9	59 (Inv). ^d
Stanislaus	Modesto—14th Street	06–099–0005	100.4	28.4	67.1	65.
	Turlock	06–099–0006	88.6	36.0	67.7	64.
Tulare	Visalia	06–107–2002	63.4	45.5	83.4	64.

Source: EPA, 2020 AQS Design Value Report, AMP480, accessed September 1, 2021. The Design Value Report excludes measurements with regionally concurred exceptional event flags. AQS reports for 24-hour PM_{2.5} data are only available for the 2006 24-hour PM_{2.5} NAAQS as a Pollutant Standard, thus this report only reflects the 2006 24-hour PM_{2.5} NAAQS and does not include the 1997 24-hour PM_{2.5} NAAQS as a Pollutant Standard. Subsequently, AQS only allows the EPA to place concurrence flags on data associated with the 2006 24-hour PM_{2.5} NAAQS. 40 CFR part 50 Appendix N specifies the data handling and design value calculations for both the 2006 24-hour PM_{2.5} NAAQS and the 1997 24-hour PM_{2.5} NAAQS. The design values in the Design Value Report for the 2006 24-hr PM_{2.5} NAAQS for the San Joaquin Valley nonattainment area are the same as would be expected for the 1997 24-hr PM_{2.5} NAAQS if the exceptional events for that NAAQS were correctly represented in AQS.

Notes: Inc = Incomplete data. Inv = Invalid design value due to incomplete data.

^a The 2018–2020 design value at Fresno–Foundry (AQS ID: 06–019–2016) is based on concentration data from January 1, 2020 to December 31, 2020. The site began operation in 2020; therefore, data from January 1, 2018 to December 31, 2019 are not available. Based on 40 CFR part 50, Appendix N, section 4.2(b), three years of valid annual PM_{2.5} 98th percentile mass concentrations are required to produce a valid 24-hour PM_{2.5} NAAQS design value. Thus, the Fresno–Foundry 2018–2020 design value is considered invalid.

^b Based on the design value calculation methodologies described in 40 CFR part 50, Appendix N, section 4.2(b), the Clovis–Villa (AQS ID: 06–019–5001) 2018–2020 design value is considered invalid due to incomplete data in the 2nd, 3rd, and 4th quarters of 2019.

²⁸² The Clovis–Villa and Fresno–Garland monitoring sites have the same 2020 design value of 62 µg/m³.

²⁸³ EPA, 2020 Raw Data Report, AMP350, accessed July 13, 2021.

^c Identification of the 98th percentile 24-hour concentration is based on the number of creditable samples in a given year. See 40 CFR part 50, appendix N, section 4.5. Specifically, in any year for which there are at least 351 creditable samples, the 98th percentile is the 8th highest concentration, and as the number of creditable samples decreases the 98th percentile concentration is represented by a data point closer to the maximum concentration. The number of creditable samples in 2018 for Manteca is reflected inaccurately in AQS and results in an inaccurate 2018 98th percentile concentration and 2018–2020 design value. Table 5 reflects the 2018 98th percentile concentration and 2018–2020 design value based on the corrected number of creditable samples. See memorandum dated August 6, 2021, from Dena Vallano, EPA Region IX, to Docket EPA–R09–OAR–2021–0261, Subject: “San Joaquin Valley, CA 1997 24-hour PM_{2.5} Nonattainment Area, Manteca Monitoring.”

^d Based on the design calculation methodologies described in 40 CFR part 50, Appendix N, section 4.2(b), the Manteca (AQS ID: 06–077–2010) 2018–2020 design value is considered invalid due to incomplete data in the 1st, 2nd, and 3rd quarters of 2019.

In the EPA’s review of monitoring data for the 1997 24-hour PM_{2.5} NAAQS for the San Joaquin Valley nonattainment area, the EPA is excluding certain exceedances of the standard from the attainment determination presented herein because they were the result of exceptional events. Under the EPA’s Exceptional Events Rule (EER),²⁸⁴ exceedances flagged as exceptional events will only be considered for EPA concurrence if the data affect one of the types of regulatory actions specified by the EER. The State has submitted a demonstration for a wildfire PM_{2.5} exceptional event covering a total of 30 measured exceedances occurring over 5 consecutive days (August 20–24, 2020) at 8 monitoring sites within the San Joaquin Valley nonattainment area that were critical for informing this attainment determination.²⁸⁵ The State’s submission notes that additional San Joaquin Valley monitoring sites were affected by wildfire smoke during the 2018–2020 period, but that those dates were not included in the submission because they did not cause the 2020 design values to violate the 1997 24-hour PM_{2.5} NAAQS and did not have regulatory significance relevant to this determination.²⁸⁶ The EPA reviewed the documentation that the State provided to demonstrate that these exceedances meet the criteria for exceptional events under the EER. The EPA concurred with the State’s determinations that, based on the weight of evidence, the exceedances were caused by an exceptional event.²⁸⁷ Accordingly, the EPA has determined that the monitored exceedances associated with this exceptional event should not be used for regulatory purposes, including the evaluation of whether the San Joaquin Valley nonattainment area has attained by the

attainment date and evaluation of the CAA Serious area and section 189(d) plan submission. Excluding these exceedances caused by uncontrollable emissions, the EPA proposes to determine that the San Joaquin Valley has attained the 1997 24-hour PM_{2.5} NAAQS, consistent with attainment of the standard projected by the State in the SJV PM_{2.5} Plan.

VI. Summary of Proposed Action and Request for Public Comment

The EPA is proposing to determine that the San Joaquin Valley nonattainment area has attained the 1997 24-hour PM_{2.5} NAAQS, based on complete (or otherwise not inconsistent), quality-assured, and certified ambient air quality monitoring data for the 2018–2020 monitoring period. If finalized, this proposed determination that the San Joaquin Valley nonattainment area has attained the 1997 24-hour PM_{2.5} NAAQS would not constitute a redesignation of the area to attainment. Under CAA section 107(d)(3)(E), redesignations of nonattainment areas to attainment require states to meet a number of additional statutory criteria, including the EPA’s approval of a SIP revision demonstrating maintenance of the standard for 10 years after redesignation. The designation status of the San Joaquin Valley area will remain Serious nonattainment for the 1997 24-hour PM_{2.5} NAAQS until such time as the EPA determines that the area meets the CAA requirements for redesignation to attainment.

For the reasons discussed in this proposed rule, under CAA section 110(k)(3), the EPA is also proposing to approve in part and disapprove in part portions of the SJV PM_{2.5} Plan submitted by California that pertain to the 1997 24-hour PM_{2.5} NAAQS in the San Joaquin Valley nonattainment area as follows:

(1) We are proposing to approve the following elements as meeting the Serious nonattainment area planning requirements:

(a) The 2013 base year emissions inventories as meeting the requirements of CAA section 172(c)(3) and 40 CFR 51.1008(b);

(b) the BACM/BACT demonstration as meeting the requirements of CAA

section 189(b)(1)(B) and 40 CFR 51.1010(a);

(c) the demonstration (including air quality modeling) that the Plan provides for attainment as expeditiously as practicable as meeting the requirements of CAA sections 179(d) and 189(b) and 40 CFR 51.1011(b);

(d) the RFP demonstration as meeting the requirements of CAA sections 172(c)(2) and 171(1) and 40 CFR 51.1012; and

(e) the quantitative milestone demonstration as meeting the requirements of CAA section 189(c) and 40 CFR 51.1013;

(2) We are proposing to approve the following elements as meeting the CAA section 189(d) planning requirements:

(a) The 2013 base year emissions inventories as meeting the requirements of CAA section 172(c)(3) and 40 CFR 51.1008(c);

(b) the BACM/BACT demonstration as meeting the requirements of CAA sections 189(a)(1)(C)²⁸⁸ and 189(b)(1)(B) and 40 CFR 51.1010(c);

(c) the demonstration that the Plan will, at a minimum, achieve an annual five percent reduction in emissions of NO_x as meeting the requirements of CAA section 189(d) and 40 CFR 51.1010(c);

(d) the demonstration (including air quality modeling) that the Plan provides for attainment as expeditiously as practicable as meeting the requirements of CAA sections 179(d) and 189(d) and 40 CFR 51.1011(b);

(e) the RFP demonstration as meeting the requirements of CAA sections 172(c)(2) and 171(1) and 40 CFR 51.1012; and

(f) the quantitative milestone demonstration as meeting the requirements of CAA section 189(c) and 40 CFR 51.1013;

(3) We are proposing to approve the motor vehicle emission budgets for 2017 and 2020 as shown in Table 8 of this proposed rule because they are derived

²⁸⁸ As discussed in section III.B of this document, a section 189(d) plan must address any outstanding Moderate or Serious area requirements that have not previously been approved. Because we have not previously approved a subpart 4 RACM demonstration for the San Joaquin Valley nonattainment area, we are also proposing to approve the BACM/BACT demonstration in the SJV PM_{2.5} Plan as meeting the subpart 4 RACM/RACT requirement for the area.

²⁸⁴ 40 CFR 50.1(j), (k), (l); 50.14(a)(1)(i); 51.930.

²⁸⁵ The eight monitoring sites covered by the August 20–24, 2020 wildfire exceptional event demonstration include Fresno–Foundry, Bakersfield–Airport (Planz), Corcoran–Patterson, Hanford–Irwin, Stockton–Hazelton, Manteca, Modesto–14th Street, and Turlock.

²⁸⁶ SJVUAPCD, “Exceptional Event Demonstration for August 2020 PM_{2.5} Exceedances due to Wildfires”, May 11, 2021, 3.

²⁸⁷ Letter dated July 13, 2021, from Elizabeth J. Adams, Director, Air and Radiation Division, EPA Region IX, to Michael Benjamin, Division Chief, Air Quality Planning and Science Division, CARB.

from approvable RFP and attainment demonstrations and meet the requirements of CAA section 176(c) and 40 CFR part 93, subpart A;

(4) We are proposing to approve the inter-pollutant trading mechanism provided for use in transportation conformity analyses for the 1997 24-hour PM_{2.5} NAAQS, in accordance with 40 CFR 93.124(b); and

(5) We are proposing to disapprove the contingency measure element of the SJV PM_{2.5} Plan for the 1997 24-hour PM_{2.5} NAAQS for both the Serious area and CAA section 189(d) planning requirements for failing to meet the requirements of CAA section 172(c)(9). However, based on our proposed finding of attainment by the applicable attainment date, we are also proposing to determine that the contingency measures requirement will no longer apply to the San Joaquin Valley area for the 1997 24-hour PM_{2.5} NAAQS if we finalize the determination of attainment by the applicable attainment date. Therefore, our proposed disapproval, if finalized, would not trigger sanctions or FIP clocks, and we are proposing to issue a protective finding for transportation conformity determinations under 40 CFR 93.120(a)(3) if the proposed disapproval is finalized.

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

VII. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at <https://www2.epa.gov/laws-regulations/laws-and-executive-orders>.

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

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

B. Paperwork Reduction Act (PRA)

This action does not impose an information collection burden under the PRA because the proposed partial SIP approval and partial disapproval, if finalized, will not in-and-of itself create

any new information collection burdens but will simply disapprove certain State requirements for inclusion in the SIP.

C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. This action will not impose any requirements on small entities. This proposed partial SIP approval and partial disapproval, if finalized, will not in-and-of itself create any new requirements but will simply disapprove certain state requirements for inclusion in the SIP.

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 proposes to partially approve and partially disapprove pre-existing requirements under state or local law and imposes no new requirements. Accordingly, no additional costs to state, local, or tribal governments, or to the private sector, 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 revision that the EPA is proposing to partially approve and partially disapprove would not 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 this proposed partial SIP approval and partial disapproval, if finalized, will not in-and-of itself create any new regulations but will simply disapprove certain state requirements for inclusion in the SIP.

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 51

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.*

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Deborah Jordan,

Acting Regional Administrator, Region IX.

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