

## ENVIRONMENTAL PROTECTION AGENCY

### 40 CFR Part 52

[EPA-R09-OAR-2021-0884; FRL-9292-03-R9]

#### Clean Air Plans; 2012 Fine Particulate Matter Serious Nonattainment Area Requirements; San Joaquin Valley, California

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Proposed rule.

**SUMMARY:** On December 29, 2021, the Environmental Protection Agency (EPA or “Agency”) published a proposed rule to approve the State of California’s Serious area plan for the San Joaquin Valley (SJV) for the 2012 annual fine particulate matter (PM<sub>2.5</sub>) national ambient air quality standards (NAAQS) for all Serious PM<sub>2.5</sub> area planning requirements, except for contingency measures, which the EPA proposed to disapprove. Based on adverse comments submitted on that proposed rule and as a result of a Ninth Circuit Court of Appeals decision on a related SJV PM<sub>2.5</sub> rulemaking for the 2006 24-hour PM<sub>2.5</sub> NAAQS, the EPA has reconsidered its prior proposal and now proposes to disapprove the State’s plan for certain Serious area planning requirements for the 2012 annual PM<sub>2.5</sub> NAAQS. The nonattainment plan elements that the EPA proposes to disapprove include the plan’s best available control measures (BACM) demonstration for ammonia and building heating, demonstrations of attainment and reasonable further progress, quantitative milestones, and motor vehicle emission budgets. The EPA is also proposing to disapprove the State’s optional precursor demonstration for ammonia. We are not re-proposing any action on the Serious area requirements for emissions inventories nor contingency measures; our prior proposal to approve the emissions inventory element and to disapprove the contingency measure element of the nonattainment plan requirements for the 2012 annual PM<sub>2.5</sub> NAAQS remains unchanged. The EPA will accept comments on this new proposed rule during a 45-day public comment period and public hearing, as described in this notice.

**DATES:** Any comments must arrive by November 21, 2022.

**Public hearings:** The EPA will host two public hearings on this proposed rule. The first will take place November 2, 2022, 7:30 p.m. to 8:30 p.m. The second will take place November 3, 2022, 7:00 p.m. to 8:00 p.m. The

hearings will be held to accept oral comments on this proposed rule. Immediately prior to each public hearing, and on October 28, 2022, the EPA will host public meetings on this proposed rule. For further information on the public hearings and public meetings, please see the **ADDRESSES** and **SUPPLEMENTAL INFORMATION** sections.

**ADDRESSES:** The November 2, 2022 public hearing will take place at Fresno City College, Old Administration Building, Room 251, 1101 E University Ave., Fresno, CA 93741. The November 3, 2022 public hearing will take place at Bakersfield College, Norman Levan Center, 1801 Panorama Drive, Bakersfield, CA 93305.

Submit your comments, identified by Docket ID No. EPA-R09-OAR-2021-0884, at <https://www.regulations.gov>. For comments submitted at *Regulations.gov*, follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from *Regulations.gov*. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (*i.e.*, on the web, cloud, or other file sharing system). For additional submission methods, please contact the person identified in the **FOR FURTHER INFORMATION CONTACT** section. For the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit <https://www.epa.gov/dockets/commenting-epa-dockets>.

**FOR FURTHER INFORMATION CONTACT:** For questions regarding this proposed rule, please contact Rory Mays, Air Planning Office (AIR-2), EPA Region IX, (415) 972-3227. For questions regarding the public hearings and related public meetings, please contact Kelley Xuereb, Immediate Office (AIR-1), EPA Region IX, (415) 947-4171. Both can be reached by emailing [SJVPublicMeetings@epa.gov](mailto:SJVPublicMeetings@epa.gov).

**SUPPLEMENTARY INFORMATION:** In addition to the two in-person public hearings, the EPA will host three public meetings. The public meetings are an informal opportunity to speak with EPA

staff about the action. We will not accept public comments during the public meetings. The first meeting will be held virtually on October 28, 2022, 12:00 p.m. to 2:00 p.m. Participants can register to attend the meeting at: <https://usepa.zoomgov.com/meeting/register/vJltc-qppzooGCZI10LqoTXf6OpNZIVbWco>.

The second will take place on November 2, 2022, 5:30 p.m. to 7:00 p.m. prior to the public hearing at Fresno City College, Old Administration Building, Room 251, 1101 E University Ave., Fresno, CA 93741. The third will take place on November 3, 2022, 5:00 p.m. to 6:30 p.m. prior to the public hearing at Bakersfield College, Norman Levan Center, 1801 Panorama Drive, Bakersfield, CA 93305. Spanish translation will be available during all three events. If you would like to submit a request for reasonable accommodation, please email [SJVPublicMeetings@epa.gov](mailto:SJVPublicMeetings@epa.gov). For additional information and updates, please visit: <https://www.epa.gov/sanjoaquinvalley>.

Throughout this document, “we,” “us,” and “our” refer to the EPA.

#### Table of Contents

- I. Background for Proposed Action
  - A. Applicable SIP Submissions, Completeness Review, and Clean Air Act Requirements
  - B. December 29, 2021 Proposed Rule
  - C. Adverse Comments Submitted January 28, 2022
  - D. Ninth Circuit Decision on Related SJV PM<sub>2.5</sub> Plan
- II. Reconsideration of the San Joaquin Valley Serious PM<sub>2.5</sub> Plan
  - A. Ammonia Precursor Demonstration
  - B. Best Available Control Measures
  - C. Attainment Demonstration
  - D. Reasonable Further Progress Demonstration and Quantitative Milestones
  - E. Motor Vehicle Emission Budgets
- III. Environmental Justice Considerations
- IV. Title VI of the Civil Rights Act
  - A. Background on CAA Section 110(a)(2)(E)
  - B. Background on Title VI of the Civil Rights Act of 1964
  - C. Comments Received on 2021 Proposed Rule
- V. Summary of Proposed Actions and Request for Public Comment
- VI. Statutory and Executive Order Reviews

#### I. Background for Proposed Action

The EPA discussed background, applicable State implementation plan (SIP) submissions, completeness review, and Clean Air Act (CAA or “Act”) requirements for the SJV Serious PM<sub>2.5</sub>

nonattainment area<sup>1</sup> in sections I, II, and III of our December 29, 2021 proposed rule on California's Serious area plan for the 2012 annual PM<sub>2.5</sub> NAAQS.<sup>2</sup> We refer to that proposed rule herein as the "2021 Proposed Rule," briefly summarize the relevant CAA requirements and our previous proposed action with respect to those requirements here, and rely on the more detailed expositions in that proposed rule.

The EPA promulgated the primary annual PM<sub>2.5</sub> NAAQS of 12.0 micrograms per cubic meter (µg/m<sup>3</sup>) in 2012 ("2012 annual PM<sub>2.5</sub> NAAQS"),<sup>3</sup> designated and classified the SJV as Moderate nonattainment for this NAAQS in 2015,<sup>4</sup> and reclassified the SJV from Moderate to Serious nonattainment for this NAAQS in our final rule published November 26, 2021.<sup>5</sup> That reclassification action required California to submit a "Serious area" attainment plan. Such an attainment plan must include, among other things, provisions to assure that, under CAA section 189(b)(1)(B), the BACM for the control of direct PM<sub>2.5</sub> and PM<sub>2.5</sub> precursors are implemented no later than four years after reclassification of the area and a demonstration (including air quality modeling) that the plan provides for attainment of this NAAQS as expeditiously as practicable but no later than December 31, 2025. That reclassification action also triggered statutory deadlines for California to submit SIP submissions addressing the Serious area attainment plan requirements for the 2012 annual PM<sub>2.5</sub> NAAQS: June 27, 2023, for emissions inventories, BACM, and nonattainment new source review (NSR), and December 31, 2023, for the attainment demonstration and related planning requirements.

#### A. Applicable SIP Submissions, Completeness Review, and Clean Air Act Requirements

In this proposed rule, the EPA is proposing action on portions of two SIP submissions submitted by the California Air Resources Board (CARB) to address combined nonattainment plan

requirements for the 1997, 2006, and 2012 PM<sub>2.5</sub> NAAQS in the SJV.<sup>6</sup> Specifically, the EPA is proposing to act only on those portions of the following two plan submissions that pertain to the Serious area requirements for the 2012 annual PM<sub>2.5</sub> NAAQS: (1) the "2018 Plan for the 1997, 2006, and 2012 PM<sub>2.5</sub> Standards," adopted by the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD or District) on November 15, 2018, and by CARB on January 24, 2019 ("2018 PM<sub>2.5</sub> Plan");<sup>7</sup> and (2) the "San Joaquin Valley Supplement to the 2016 State Strategy for the State Implementation Plan," adopted by CARB on October 25, 2018 ("Valley State SIP Strategy").

We refer to the relevant portions of these SIP submissions collectively in this proposal as the "SJV PM<sub>2.5</sub> Plan" or "Plan." The SJV PM<sub>2.5</sub> Plan addresses attainment plan requirements for multiple PM<sub>2.5</sub> NAAQS in the SJV. CARB submitted the SJV PM<sub>2.5</sub> Plan to the EPA as a revision to the California SIP on May 10, 2019.<sup>8</sup> These SIP submissions became complete by operation of law on November 10, 2019.<sup>9</sup> In the 2021 Proposed Rule, we

<sup>6</sup> In our 2021 Proposed Rule, we also proposed action on a third SIP submission dated July 19, 2019. 86 FR 74310, 74311. However, the relevant component of that submission pertained only to contingency measures, and we are not modifying our proposed action on contingency measures in this proposed rule.

<sup>7</sup> The 2018 PM<sub>2.5</sub> Plan was developed jointly by CARB and the District.

<sup>8</sup> Letter dated May 9, 2019, from Richard W. Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region IX. Previously, in separate rulemakings, the EPA has finalized action on the portions of the SJV PM<sub>2.5</sub> Plan that pertain to the 1997 annual PM<sub>2.5</sub> NAAQS, the 1997 24-hour PM<sub>2.5</sub> NAAQS, the 2006 24-hour PM<sub>2.5</sub> NAAQS, and the Moderate area plan for the 2012 annual PM<sub>2.5</sub> NAAQS. See 86 FR 67329 (November 26, 2021) (final rule regarding the 1997 annual PM<sub>2.5</sub> NAAQS); 87 FR 4503 (January 28, 2022) (final rule regarding the 1997 24-hour PM<sub>2.5</sub> NAAQS); 85 FR 44192 (July 22, 2020) (final rule regarding the 2006 24-hour PM<sub>2.5</sub> NAAQS, except contingency measures); and 86 FR 67343 (November 26, 2021) (final rule regarding the Moderate area plan for the 2012 annual PM<sub>2.5</sub> NAAQS and contingency measures for the 2006 24-hour PM<sub>2.5</sub> NAAQS).

<sup>9</sup> 87 FR 74310, 74311–74312. We note that, with respect to plans previously required for the 1997, 2006, and 2012 PM<sub>2.5</sub> NAAQS, including the Moderate area plan only for the 2012 annual PM<sub>2.5</sub> NAAQS, the EPA had made findings of failure to submit effective January 7, 2019, that triggered sanctions clocks. 83 FR 62720 (December 6, 2018). Following the May 10, 2019 submission of the 2018 PM<sub>2.5</sub> Plan and Valley State SIP Strategy, the EPA affirmatively determined that the SIP submissions addressed the deficiency that was the basis for such findings, resulting in the termination of the associated sanctions clocks. Letter dated June 24, 2020, from Elizabeth Adams, Director, Air and Radiation Division, EPA Region IX, to Richard W. Corey, Executive Officer, CARB. However, the findings of failure to submit did not apply to the Serious area plan for the 2012 annual PM<sub>2.5</sub> NAAQS because it was not yet required, and the June 24,

proposed to find that the 2018 PM<sub>2.5</sub> Plan and Valley State SIP Strategy each met the procedural requirements for public notice and hearing in CAA sections 110(a)(1) and (2) and 110(l) and 40 CFR 51.102.

In our 2021 Proposed Rule, we also summarized the CAA requirements applicable to Serious PM<sub>2.5</sub> nonattainment areas.<sup>10</sup> In the current proposed rule, we are proposing action with respect to the following requirements:

(1) Provisions to assure that BACM, including best available control technology (BACT), for the control of direct PM<sub>2.5</sub> and all PM<sub>2.5</sub> precursors shall be implemented no later than four years after the area is reclassified (CAA section 189(b)(1)(B)), unless the State elects to make an optional precursor demonstration that the EPA approves authorizing the State not to regulate one or more of these pollutants;

(2) A demonstration (including air quality modeling) that the plan provides for attainment as expeditiously as practicable but no later than the end of the tenth calendar year after designation as a nonattainment area (*i.e.*, December 31, 2025, for the SJV for the 2012 annual PM<sub>2.5</sub> NAAQS) (CAA sections 188(c)(2) and 189(b)(1)(A)(i));

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

(4) Quantitative milestones that the State must meet every three years until the EPA redesignates the area to attainment and which demonstrate RFP toward attainment by the applicable date (CAA section 189(c)); and

(5) Motor vehicle emissions budgets (budgets) for 2025 (CAA section 176(c)).

We are also proposing to disapprove the State's optional precursor demonstration for ammonia.<sup>11</sup>

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

2020 completeness letter did not address the Serious area plan for the 2012 annual PM<sub>2.5</sub> NAAQS.

<sup>10</sup> 87 FR 74310, 74313.

<sup>11</sup> We are not re-proposing any action on the Serious area requirements for emissions inventories nor contingency measures; our prior proposal to approve the emissions inventory element and to disapprove the contingency measure element of the nonattainment plan requirements for the 2012 annual PM<sub>2.5</sub> NAAQS remains unchanged.

<sup>1</sup> For a precise description of the geographic boundaries of the SJV PM<sub>2.5</sub> nonattainment area, see 40 CFR 81.305.

<sup>2</sup> 86 FR 74310 (December 29, 2021).

<sup>3</sup> 78 FR 3086 (January 15, 2013) and 40 CFR 50.18. Unless otherwise noted, all references to the PM<sub>2.5</sub> standards in this notice, including all instances of "2012 annual PM<sub>2.5</sub> NAAQS," are to the 2012 primary annual NAAQS of 12.0 µg/m<sup>3</sup> codified at 40 CFR 50.18.

<sup>4</sup> 80 FR 2206 (January 15, 2015) (codified at 40 CFR 81.305).

<sup>5</sup> 86 FR 67343 (November 26, 2021).

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");<sup>12</sup> (2) "State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990; Supplemental" ("General Preamble Supplement");<sup>13</sup> 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").<sup>14</sup> More recently, in an August 24, 2016 final rule entitled, "Fine Particulate Matter National Ambient Air Quality Standards: State Implementation Plan Requirements" ("PM<sub>2.5</sub> 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 all PM<sub>2.5</sub> NAAQS.<sup>15</sup> We discuss these regulatory requirements and interpretations of the Act as appropriate in our evaluation of the State's submissions below.

#### B. December 29, 2021 Proposed Rule

In our 2021 Proposed Rule, the EPA proposed to approve the SJV PM<sub>2.5</sub> Plan's: (1) emissions inventory for the 2013 base year; (2) precursor demonstrations that emissions of ammonia, sulfur oxides (SO<sub>x</sub>), and volatile organic compounds (VOC) do not significantly contribute to exceedances of the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV; (3) BACM demonstration for emission sources of direct PM<sub>2.5</sub> and nitrogen oxides (NO<sub>x</sub>); (4) attainment demonstration based on air quality modeling<sup>16</sup> and emissions reductions related to aggregate commitments; (5) RFP demonstration; (6) quantitative milestones; and (7) motor vehicle emission budgets. We briefly summarize several aspects of those proposed approvals in the applicable sub-sections of section II of this proposed rule.

We also proposed to disapprove the Plan's contingency measures and noted the requirements for nonattainment NSR and the State's separate submission for the nonattainment NSR requirements. However, as we are not re-proposing any action on contingency measures nor nonattainment NSR in this proposed rule, we do not summarize those proposals herein.<sup>17</sup> In addition, we are not re-proposing any action on the Plan's precursor demonstrations for SO<sub>x</sub> and VOC in this proposed rule; our 2021 Proposed Rule to approve the 2018 PM<sub>2.5</sub> Plan's demonstrations that emissions of SO<sub>x</sub> and VOC do not significantly contribute to exceedances of the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV remains unchanged.

Finally, we are not re-proposing any action in this proposed rule on the Plan's base year emissions inventory; our 2021 Proposed Rule to approve the 2018 PM<sub>2.5</sub> Plan's base year emissions inventory remains unchanged. Nevertheless, we briefly summarize our prior proposal<sup>18</sup> given the role that base year emissions inventories play in developing a plan's control strategy and attainment and RFP demonstrations.

The 2018 PM<sub>2.5</sub> Plan includes summaries of the planning emissions inventories for direct PM<sub>2.5</sub> and all PM<sub>2.5</sub> precursors (NO<sub>x</sub>, SO<sub>x</sub>,<sup>19</sup> VOC,<sup>20</sup> and ammonia) and related documentation. The Plan contains annual average daily emission inventories for 2013 through 2028 projected from the 2012 actual emissions inventory,<sup>21</sup> including the 2013 base year, the 2019 and 2022 RFP milestone years, the 2025 Serious area attainment year, and a 2028 post-attainment RFP year. The EPA proposed to approve the 2013 base year emissions inventory in the 2018 PM<sub>2.5</sub> Plan as meeting the requirements of CAA section 172(c)(3) and 40 CFR 51.1008. We also proposed to find that the future year baseline inventories in the 2018 PM<sub>2.5</sub> Plan satisfy the requirements of 40 CFR 51.1008(b)(2) and 51.1012(a)(2) and provide an adequate basis for the

control measure, attainment, and RFP demonstrations for the 2012 annual PM<sub>2.5</sub> NAAQS in the 2018 PM<sub>2.5</sub> Plan.

#### C. Adverse Comments Submitted January 28, 2022

The EPA received adverse comments on our 2021 Proposed Rule from a coalition of 13 environmental, public health, and community organizations (collectively referred to herein as "Public Justice").<sup>22</sup> We are not responding to these comments (in the sense of a final rulemaking action) in this proposed rule, but the Agency has taken them into account with respect to the Serious area plan elements discussed in this proposed rule.

Overall, the commenters argue that the EPA must disapprove the 2012 annual PM<sub>2.5</sub> NAAQS portion of the SJV PM<sub>2.5</sub> Plan based on alleged nonattainment plan requirement deficiencies in the submissions. We introduce these comments in this section of this proposed rule and present more detailed summaries and discussion of the comments in sections II.A (ammonia precursor demonstration), II.B.2 (BACM for ammonia emission sources), II.B.3 (BACM for building heating emission sources), II.C (attainment demonstration), and IV (Title VI of the Civil Rights Act).

Regarding CAA requirements for PM<sub>2.5</sub>, Public Justice points to a history of failures to timely attain the 1997 annual PM<sub>2.5</sub> NAAQS in the SJV and states that "[r]egulators point to a host of excuses from weather, to international sources, to Federal inaction, but repeatedly the State and Air District have refused to adopt feasible controls or regulate politically powerful entities" such as agricultural sources of air pollution.<sup>23</sup> The commenters take issue with the EPA's proposal to approve the plan for the stricter 2012 standard "without performing its duty to hold [CARB] and the [District] accountable to meet the

<sup>17</sup> Regarding nonattainment NSR, please see the EPA's separate rulemaking on the State's November 20, 2019 SIP submission of amendments to SJVUAPCD Rule 2201 ("New and Modified Stationary Source Review"). 87 FR 45730 (July 29, 2022) (proposed limited approval and limited disapproval of the Rule 2201 amendments).

<sup>18</sup> See section IV.A of the EPA's 2021 Proposed Rule.

<sup>19</sup> The SJV PM<sub>2.5</sub> Plan generally uses "sulfur oxides" or "SO<sub>x</sub>" in reference to SO<sub>2</sub> as a precursor to the formation of PM<sub>2.5</sub>. We use SO<sub>x</sub> and SO<sub>2</sub> interchangeably throughout this notice.

<sup>20</sup> The SJV PM<sub>2.5</sub> Plan generally uses "reactive organic gasses" or "ROG" in reference to VOC as a precursor to the formation of PM<sub>2.5</sub>. We use ROG and VOC interchangeably throughout this notice.

<sup>21</sup> 2018 PM<sub>2.5</sub> Plan, App. B, B-18.

<sup>22</sup> Comment letter dated and received January 28, 2022, from Brent Newell, Public Justice, et al., to Rory Mays, EPA, including Exhibits 1 through 47. We note, however, that there is no Exhibit 23; so, there are 46 exhibits in total. Email dated February 1, 2022, from Brent Newell, Public Justice, to Rory Mays, EPA Region IX. The 13 environmental, public health, and community organizations are Public Justice, Central Valley Environmental Justice Network, Association of Irrigated Residents, Central Valley Air Quality Coalition, Leadership Counsel for Justice and Accountability, Valley Improvement Projects, The LEAP Institute, Little Manila Rising, Center for Race, Poverty, and the Environment, Central California Asthma Collaborative, Animal Legal Defense Fund, National Parks Conservation Association, and Food and Water Watch (collectively "Public Justice").

<sup>23</sup> Public Justice Comment Letter, 2.

<sup>12</sup> 57 FR 13498 (April 16, 1992).

<sup>13</sup> 57 FR 18070 (April 28, 1992).

<sup>14</sup> 59 FR 41998 (August 16, 1994).

<sup>15</sup> 81 FR 58010 (August 24, 2016).

<sup>16</sup> We described 2018 PM<sub>2.5</sub> Plan's air quality modeling and our evaluation thereof in section IV.C of the 2021 Proposed Rule.

minimum requirements Congress imposed to protect human health.”<sup>24</sup> The commenters assert that the EPA relies on flawed, outdated information, ignores feasible controls, refuses to require regulation of ammonia, accepts aggregate commitments in lieu of other control strategies, and fails to address pollution sources in disadvantaged communities in the SJV.<sup>25</sup> With respect to specific CAA requirements, the commenters argue that the EPA must disapprove the Plan’s emissions inventory, ammonia precursor demonstration, BACM demonstration, and aggregate commitments.

Regarding Title VI of the Civil Rights Act, the commenters argue that California must provide necessary assurances that the SIP complies with Title VI of the Civil Rights Act, pursuant to CAA section 110(a)(2)(E), and failed to do so.<sup>26</sup> The commenters state that “PM<sub>2.5</sub> pollution has a disparate impact on the basis of race in the San Joaquin Valley” and assert that the Plan fails to meet CAA requirements and “deliberately ignores obvious sources and control options and inflicts disparate impacts on Black, Latino, Indigenous, and people of color” in the SJV. Therefore, the commenters advocate that the EPA must disapprove the 2012 annual PM<sub>2.5</sub> portion of the SJV PM<sub>2.5</sub> Plan.<sup>27</sup> We address the commenters’ Title VI comments in section IV of this proposed rule.

The EPA is now proposing to disapprove the Plan with respect to certain CAA requirements (BACM/BACT for ammonia emission sources, BACM/BACT for building heating emission sources, aggregate commitments, attainment demonstration, RFP demonstration, quantitative milestones, and motor vehicle emission budgets). However, we are not in this proposal comprehensively addressing all issues raised in the Public Justice comment letter.<sup>28</sup>

#### D. Ninth Circuit Decision on Related SJV PM<sub>2.5</sub> Plan

In a final rule published July 22, 2020, the EPA finalized approval of the portions of the SJV PM<sub>2.5</sub> Plan<sup>29</sup> that addressed the 2006 24-hour PM<sub>2.5</sub>

NAAQS (except for contingency measures, which the EPA acted on in a subsequent action).<sup>30</sup> On September 17, 2020, a group of five environmental, public health, and community groups (collectively referred to herein as “Medical Advocates”) petitioned the Ninth Circuit Court of Appeals (“Ninth Circuit” or “Court”) for review of the EPA’s July 22, 2020 final rule.<sup>31</sup> On April 13, 2022, the Ninth Circuit issued a Memorandum opinion that granted in part and denied in part the petition (“Memorandum Opinion”).<sup>32</sup>

The Ninth Circuit denied the petitioners’ challenge with respect to the EPA’s approval of enforceable commitments in general and the EPA’s approval of the Plan’s demonstration of BACM, BACT, and most stringent measures (MSM) for emission sources of direct PM<sub>2.5</sub> and NO<sub>x</sub> for purposes of the 2006 24-hour PM<sub>2.5</sub> NAAQS.

Significantly, however, the Ninth Circuit also denied in part and granted in part the petitioners’ challenge with respect to the EPA’s approval of the specific enforceable commitments employed as part of the SJV PM<sub>2.5</sub> Plan’s control strategy to attain the 2006 24-hour PM<sub>2.5</sub> NAAQS in the SJV by December 31, 2024. The EPA evaluates enforceable commitments based on three factors: (1) the commitment represents a limited portion of the required emission reductions, (2) the State is capable of fulfilling its commitment, and (3) the commitment is for a reasonable and appropriate timeframe. The Ninth Circuit denied the petitioners’ challenge with respect to the first and third factors but granted the petitioners’ challenge with respect to the second factor.

The Ninth Circuit found that the EPA had misapplied the second factor concerning the State’s ability to fulfill the aggregate commitments. The Court reasoned that EPA “fail[ed] to provide evidence or a reasoned explanation for its conclusion that California will be able to fulfill its commitment” in the face of a potential multi-billion dollar funding shortfall for incentive-based control measure commitments, “which could result in emission reduction shortfalls of approximately 7% of the total NO<sub>x</sub> reductions and 8% of the total

PM<sub>2.5</sub> reductions necessary for attainment.”<sup>33</sup> The Court also rejected the EPA’s arguments that: (1) the funding shortfall may be smaller than projected, (2) emission reductions may be less expensive than the strategy predicts, (3) certain yet-to-be-quantified sources of reductions in the Plan may make up for shortfalls, and (4) California and the District may identify other measures to fulfill their commitments. Instead, the Court decided that, “[b]ecause these speculative assertions are unsupported by the evidence, they fail to ensure that California and the District have a plausible strategy for achieving this portion of the attainment strategy, and therefore do not collectively satisfy the second factor of the EPA’s three-factor test.”<sup>34</sup> The Court concluded that the EPA’s analysis with respect to the second factor for evaluating enforceable commitments was arbitrary and capricious, vacated the final rule with respect to this factor, and remanded the matter to the EPA for further consideration of the second factor.<sup>35</sup>

The EPA is currently considering how to address the Court’s vacatur and remand with respect to the 2006 24-hour PM<sub>2.5</sub> NAAQS portion of the SJV PM<sub>2.5</sub> Plan and is not proposing any action with respect to those standards in this proposed rule. However, the Ninth Circuit’s decision is very relevant to this proposed rule because the State relied on a common control strategy, including the same enforceable commitments (*i.e.*, the same set of control measure commitments and aggregate tonnage commitments) for purposes of both the 2006 24-hour PM<sub>2.5</sub> NAAQS Serious area plan and the 2012 annual PM<sub>2.5</sub> NAAQS Serious area plan. The EPA acknowledges the deficiency in the factual support for the aggregate commitments identified by the Ninth Circuit and that this remains the case. If the EPA cannot approve the aggregate commitments, then this has a direct bearing on other elements of the State’s Serious area SIP submissions for the 2012 annual PM<sub>2.5</sub> NAAQS. As discussed in section II.C of this proposed rule, based on our reconsideration of the facts concerning the enforceable commitments in the SJV PM<sub>2.5</sub> Plan with respect to the 2012 annual PM<sub>2.5</sub> NAAQS in light of the Ninth Circuit’s decision, the EPA now proposes to disapprove the State’s enforceable commitments and attainment demonstration.

<sup>24</sup> Id.

<sup>25</sup> Id. at 3.

<sup>26</sup> Id. at 10–14.

<sup>27</sup> Id. at 1 and 21.

<sup>28</sup> Additional source categories named by Public Justice include, for example, residential wood burning, open burning, conservation management practices at farming operations, soil NO<sub>x</sub> emissions, stationary agricultural internal combustion engines, and cleaner mobile agricultural equipment engines. Public Justice Comment Letter, 18–20.

<sup>29</sup> 85 FR 44192.

<sup>30</sup> 86 FR 67343 (disapproving contingency measures for the 2006 24-hour PM<sub>2.5</sub> NAAQS).

<sup>31</sup> *Medical Advocates for Healthy Air v. EPA*, Case No. 20–72780, Dkt. #1 (9th Cir., September 17, 2020). The five environmental, public health, and community organizations, in order of appearance in the petition, are Medical Advocates for Healthy Air, National Parks Conservation Association, Association of Irrigated Residents, and Sierra Club (collectively “Medical Advocates”).

<sup>32</sup> *Medical Advocates for Healthy Air v. EPA*, Case No. 20–72780, Dkt. #58–1 (9th Cir., April 13, 2022).

<sup>33</sup> Id. at 6.

<sup>34</sup> Id. at 7.

<sup>35</sup> Id. at 10.

## II. Reconsideration of the San Joaquin Valley Serious PM<sub>2.5</sub> Plan

The EPA has reconsidered its 2021 Proposed Rule, based on adverse comments on that prior proposal and based on a Ninth Circuit Court of Appeals decision on a related SJV PM<sub>2.5</sub> rulemaking. After careful consideration of the issues raised by commenters and the court, the EPA now proposes to disapprove the State's plan for the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV for certain Serious area planning requirements, including: (1) the Plan's precursor demonstration for ammonia; (2) BACM for ammonia emission sources and BACM for building heating emission sources; (3) the modeled attainment demonstration; (4) the RFP demonstration; (5) quantitative milestones; and (6) motor vehicle emission budgets.

In sections II.A through II.C of this proposed rule, pertaining to the Plan's precursor demonstration for ammonia as a PM<sub>2.5</sub> precursor; BACM/BACT analysis, and modeled attainment demonstration (including reliance on enforceable commitments), we present a brief summary of the 2021 Proposed Rule, a summary of the adverse comments and Ninth Circuit order, as appropriate, and our reconsidered proposal. In sections II.D and II.E, pertaining to the Plan's RFP demonstration, quantitative milestones, and motor vehicle emission budgets, we present a brief summary of the 2021 Proposed Rule and our reconsidered proposal.<sup>36</sup> We also note that sections II.A (ammonia precursor demonstration) and II.B.1 (BACM for ammonia emission sources) are inter-related in that potential control measures for ammonia emission sources play a role in both: (1) selecting a reasonable percent emission reduction to evaluate modeled ambient PM<sub>2.5</sub> responses to ammonia emission reductions; and (2) assessing the availability and application of BACM to such sources in the SJV.

### A. Ammonia Precursor Demonstration

#### 1. Summary of 2021 Proposed Rule

In our 2021 Proposed Rule, the EPA described the requirements for PM<sub>2.5</sub> precursor pollutants, summarized the State's submissions in the SJV PM<sub>2.5</sub> Plan, and presented our evaluation thereof.<sup>37</sup> We briefly summarize those

here with respect to the Plan's demonstration for ammonia as a precursor to PM<sub>2.5</sub> for purposes of the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV. For a comprehensive discussion of Federal requirements for PM<sub>2.5</sub> precursors and a summary of California's submission, please refer to the following headings in Section IV.B of the 2021 Proposed Rule: (1) Requirements for Control of PM<sub>2.5</sub> Precursors; and (2) Summary of State's Submission.

Regarding CAA requirements applicable to PM<sub>2.5</sub> precursors, we explained that the attainment plan requirements of Title I, subpart 4 apply to emissions of direct PM<sub>2.5</sub> and emissions of NO<sub>x</sub>, ammonia, SO<sub>2</sub>, and VOC as PM<sub>2.5</sub> precursors from all types of stationary, area, and mobile sources, except as otherwise provided in the Act. We further described how the EPA interprets section 189(e) concerning regulation of precursors from major stationary sources to authorize it to determine, under appropriate circumstances, that regulation of specific PM<sub>2.5</sub> precursors from other sources in a given nonattainment area is not necessary.

As explained in the PM<sub>2.5</sub> SIP Requirements Rule, a State may elect to submit to the EPA a "comprehensive precursor demonstration" for a specific nonattainment area to show that emissions of a particular precursor from existing sources located in the nonattainment area do not contribute significantly to PM<sub>2.5</sub> levels that exceed the standard in the area.<sup>38</sup> The contribution analysis may consider the sensitivity of PM<sub>2.5</sub> to decreases in emissions of the precursor, in addition to the contribution to ambient concentrations of PM<sub>2.5</sub>.<sup>39</sup> If the EPA determines that the contribution of the precursor to PM<sub>2.5</sub> levels in the area is not significant and approves the demonstration, then the State is not required to control emissions of the relevant precursor in the attainment plan.<sup>40</sup>

The EPA issued the "PM<sub>2.5</sub> Precursor Demonstration Guidance" ("PM<sub>2.5</sub> Precursor Guidance"),<sup>41</sup> to provide recommendations to states for analyzing nonattainment area PM<sub>2.5</sub> and PM<sub>2.5</sub>

precursor emissions and developing such optional precursor demonstrations, consistent with the PM<sub>2.5</sub> SIP Requirements Rule. The guidance also describes how the State may use a sensitivity-based test, in which the modeled sensitivity or response of ambient PM<sub>2.5</sub> concentrations to changes in emissions of the precursor is estimated and then compared to a contribution threshold. In addition to comparing the concentration or modeled response to the threshold, the State can consider other information in assessing whether the precursor significantly contributes. The EPA's recommended annual average contribution threshold for the 2012 annual PM<sub>2.5</sub> NAAQS is 0.2 µg/m<sup>3</sup>.<sup>42</sup> In other words, if the estimated contribution of a precursor at monitors is below this threshold, the EPA considers this evidence that the precursor does not contribute significantly to levels above the PM<sub>2.5</sub> NAAQS in the area in question; above this threshold, the EPA considers this evidence that the precursor does contribute significantly. The EPA considers this evidence in conjunction with additional information that the State may provide, and determines whether or not the precursor contributes significantly, and so whether the State must evaluate and implement controls of the precursor emissions to the appropriate level (*e.g.*, BACM).

The State presents its precursor demonstration primarily in Appendix G of the 2018 PM<sub>2.5</sub> Plan, with additional clarifying information in a series of emails available in the docket for this proposed rule. The State estimates that anthropogenic emissions of NO<sub>x</sub>, ammonia, SO<sub>x</sub>, and VOC will decrease by 64 percent (%), 1%, 6%, and 9%, respectively, between 2013 and 2025 based on its projected emissions accounting for existing and additional control measures in the Serious area plan.<sup>43</sup> Through a concentration-based analysis, CARB found that ammonium nitrate constituted 5.2 µg/m<sup>3</sup> of the annual average PM<sub>2.5</sub> concentrations measured at the Bakersfield California Avenue monitor in 2015, exceeding the recommended threshold,<sup>44</sup> and proceeded to conduct a sensitivity-based analysis.

For analytical purposes in accordance with the EPA's guidance, the State then modeled the sensitivity of ambient PM<sub>2.5</sub> to hypothetical 30% and 70% reductions in anthropogenic emissions of ammonia in SJV for modeled years

<sup>36</sup> The Plan's RFP demonstration, quantitative milestones, and motor vehicle emission budgets were not the direct subject of adverse comments nor the Ninth Circuit decision. However, they are based on the Plan's control strategy to attain the 2012 annual PM<sub>2.5</sub> NAAQS and, thus, the flaws in the Plan's control strategy affect these additional required elements.

<sup>37</sup> 86 FR 74310, 74317–74321.

<sup>38</sup> 40 CFR 51.1006(a)(1).

<sup>39</sup> 40 CFR 51.1006(a)(1)(ii).

<sup>40</sup> 40 CFR 51.1006(a)(1)(iii).

<sup>41</sup> "PM<sub>2.5</sub> Precursor Demonstration Guidance," EPA-454/R-19-004, May 2019, including Memo dated May 30, 2019, from Scott Mathias, Acting Director, Air Quality Policy Division and Richard Wayland, Director, Air Quality Assessment Division, Office of Air Quality Planning and Standards (OAQPS), EPA to Regional Air Division Directors, Regions 1–10, EPA.

<sup>42</sup> PM<sub>2.5</sub> Precursor Guidance, 17.

<sup>43</sup> 2018 PM<sub>2.5</sub> Plan, Ch. 7, 7–5 and Table 7–2.

<sup>44</sup> 2018 PM<sub>2.5</sub> Plan, App. G, 3.

2013, 2020, and 2024. The results for 2024 are a proxy for the Plan's modeled attainment year of 2025 for the 2012 annual PM<sub>2.5</sub> NAAQS. For the 30% reduction results for 2024, upon which the State primarily relied, 2 out of 15 monitoring sites in SJV (Madera and Hanford) had modeled responses to ammonia reductions that were above the threshold. The ambient PM<sub>2.5</sub> response declines substantially from 2020 to 2024, with the decline being generally larger for the sites with the highest projected PM<sub>2.5</sub> levels. The State supplements the sensitivity analysis for ammonia with consideration of additional information such as emission trends, the appropriateness of future year versus base year sensitivity, available emission controls, and the severity of nonattainment.<sup>45</sup>

The State's precursor demonstration for ammonia also presents a review of District agricultural rules that control VOC emissions, but also provide ammonia reduction co-benefits. The State concludes that a 30% reduction is a reasonable upper bound on the potential ammonia reductions to model. Finally, the State's precursor demonstration presents extensive support for the State's conclusion that there is an ambient excess of ammonia relative to nitrate, *i.e.*, that particulate ammonium nitrate formation in SJV is NO<sub>x</sub>-limited, and will become increasingly NO<sub>x</sub>-limited as NO<sub>x</sub> reductions increase into the future from the State's motor vehicle control program and other measures the State intends to undertake in the Serious area plan. Based on the forgoing considerations, the State concludes that ammonia emissions do not contribute significantly to ambient PM<sub>2.5</sub> levels that exceed the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV.

The EPA presented its initial evaluation of the State's ammonia precursor demonstration in section IV.B.3.a of the 2021 Proposed Rule, with more detailed summaries and evaluation in two EPA technical support documents (TSDs): "Technical Support Document, EPA Evaluation of PM<sub>2.5</sub> Precursor Demonstration, San Joaquin Valley PM<sub>2.5</sub> Plan for the 2006 PM<sub>2.5</sub> NAAQS," February 2020 ("EPA's PM<sub>2.5</sub> Precursor TSD"), and "Technical Support Document, EPA Evaluation of Ammonia Precursor Demonstration, San Joaquin Valley Moderate Area PM<sub>2.5</sub> Plan for the 2012 PM<sub>2.5</sub> NAAQS," August 2021 ("EPA's Ammonia Precursor TSD").

We noted that the EPA's PM<sub>2.5</sub> Precursor Guidance provides for

consideration of future year sensitivity and that consideration of additional information beyond the concentration-based and sensitivity-based analyses may be appropriate in assessing a precursor's significance. We summarized the State's assertions that 30% is a reasonable upper bound for potential ammonia emission reductions based on research cited in Appendix C of the 2018 PM<sub>2.5</sub> Plan concerning ammonia emissions and potential control options for agricultural sources.<sup>46</sup> However, we did not elaborate in the 2021 Proposed Rule as to why we proposed to agree that 30% was a reasonable upper bound.

We stated that ambient PM<sub>2.5</sub> responses to ammonia emission reductions decline over time, and in concert with the large projected NO<sub>x</sub> emission reductions, with the largest declines occurring at sites with highest projected PM<sub>2.5</sub> levels. For the two sites (Madera and Hanford) where the State's modeled response in 2024 to a 30% ammonia emission reduction exceeded the recommended 0.2 µg/m<sup>3</sup> threshold, we evaluated additional information and, based on that information, gave the modeled projected responses above the threshold at these sites less weight.

We also considered studies cited by CARB on the 2013 DISCOVER-AQ aircraft measurements and 2017 satellite measurements, both of which suggest that ammonia concentrations are underestimated in the SJV. We noted that if modeled ammonia concentrations were closer to observations, then the modeled response to ammonia precursor reductions would be lower than shown in the 2018 PM<sub>2.5</sub> Plan's precursor demonstration. Similarly, an increase in modeled ambient ammonia concentrations would also make the model response more consistent with the evidence from the multiple ambient measurement studies that suggest a very low ambient sensitivity to ammonia, based on measured excess ammonia relative to NO<sub>x</sub>, the abundance of particulate nitrate relative to gaseous NO<sub>x</sub>, and the large abundance of ammonia relative to nitric acid. These ambient measurement studies all conclude that there is a large amount of ammonia left over after reacting with NO<sub>x</sub>, so that ammonia emission reductions would be expected mainly to reduce the amount of ammonia excess, rather than to reduce the particulate ammonium nitrate, and thus provided strong evidence independent of the modeling that ambient PM<sub>2.5</sub> levels would respond comparatively weakly to ammonia emissions reductions.

Regarding changes in the effect of ammonia emission reductions over time as other pollutant levels change, we stated it was appropriate to consider changes in atmospheric chemistry that may occur between the base or current year and the attainment year because the changes may ultimately affect the nonattainment area's progress toward expeditious attainment. We stated that the 2024 model results would in this case better represent the point in time at which it is appropriate to evaluate what potential ammonia controls could achieve, because of the steep decline in NO<sub>x</sub> emissions the State projects will occur by 2024 and 2025 as a result of existing or intended control measures. We also noted that the projected annual average PM<sub>2.5</sub> concentration of 12.0 µg/m<sup>3</sup>, occurring at the Bakersfield-Planz monitoring site in 2025, would be reduced by 0.12 µg/m<sup>3</sup>, which would not be considered significant (it is below the EPA's recommended threshold of 0.2 µg/m<sup>3</sup>).

In sum, we concluded that the State had evaluated the sensitivity of ambient PM<sub>2.5</sub> levels to potential reductions in ammonia emissions using appropriate modeling techniques; the modeled response to ammonia reductions is likely lower than reported; and the State's choice of 2024 and 2025 as the reference points for purposes of evaluating the sensitivity of ambient PM<sub>2.5</sub> levels to ammonia emission reductions was well-supported. Based on all of these considerations, the EPA previously proposed to approve the State's demonstration that ammonia emissions do not contribute significantly to ambient PM<sub>2.5</sub> levels that exceed the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV.

## 2. Summary of Adverse Comments

Public Justice states that the "EPA must disapprove the ammonia precursor demonstration" and that "CARB's tortured analysis (and EPA's proposed acceptance of it)" is arbitrary and capricious. The commenter makes several assertions in support of this comment.<sup>47</sup>

First, Public Justice notes that CARB's analysis concluded that ammonia contributes 5.2 µg/m<sup>3</sup> to annual average PM<sub>2.5</sub> concentrations, and that this is well above the EPA's recommended annual average contribution threshold of 0.2 µg/m<sup>3</sup>.<sup>48</sup> The commenters also

<sup>47</sup> Public Justice Comment Letter, 16–18.

<sup>48</sup> The commenters note that 38% of the annual average ambient PM<sub>2.5</sub> in Bakersfield is ammonium nitrate. Public Justice Comment Letter, 6. See also, 2018 PM<sub>2.5</sub> Plan, Ch. 3, Figure 3–2 ("Bakersfield PM<sub>2.5</sub> Speciation (Average 2011 to 2013)").

<sup>45</sup> *Id.* at App. G, 5.

<sup>46</sup> EPA's PM<sub>2.5</sub> Precursor TSD, 13.

took issue with CARB and the EPA's arguments that such results overstate the role of ammonia because NO<sub>x</sub> emissions decline over time, and the EPA's decision to look at the results of sensitivity modeling for the response of ambient PM<sub>2.5</sub> levels to potential ammonia emission reductions in the future year 2024. The commenters assert that this analytical approach of considering the projected sensitivity to ammonia reductions in the future year "ignores the statutory imperative to demonstrate attainment as expeditiously as practicable," per CAA section 172(a)(2)(A), and that, even after evaluating the impact "for the most favorable date" (2024), CARB still found significant contribution for ammonia above the EPA's recommended threshold.

Second, Public Justice questioned CARB's reliance and the EPA's proposed acceptance of a sensitivity analysis that assumed only a 30% modeled reduction of ammonia emissions. Public Justice points out that the EPA's guidance for precursor demonstrations suggests that states should evaluate the effect of reducing emissions between 30% and 70%, and states that "CARB argues, and EPA agrees, that only the minimal 30 percent control level is reasonable" despite large ammonia sources (e.g., "industrial dairy and poultry operations") never having been regulated in the SJV and the prospect for relatively easier and cheaper emission reductions than those for NO<sub>x</sub>.<sup>49</sup> The commenters argue that "[t]he analysis of potential controls is particular[ly] weak and ignores the wealth of literature demonstrating that strategies for reducing ammonia emissions from agriculture . . . are among the most effective for reducing PM concentrations," and cite several studies in support of this argument. The commenters further state that reducing ammonia emissions may be achieved through "strategies such as improving livestock feed to reduce excreted nutrients, altering manure storage and handling practices to prevent [ammonia] emissions, and improving synthetic fertilizer use efficiency," again citing numerous studies.<sup>50</sup> The commenters

<sup>49</sup>Public Justice Comment Letter, 2, 5, and 16–17, and Exhibits 31 through 34.

<sup>50</sup>Public Justice Comment Letter, 16–17, Exhibits 35 through 40 and three additional studies: N. Cole, et al., "Influence of dietary crude protein concentration and source on potential ammonia emissions from beef cattle manure," *J. Anim. Sci.* 83, 722, 2005; N. Cole, P. Defoor, M. Galyean, G. Duff, J. Glegghorn, "Effects of phase-feeding of crude protein on performance, carcass characteristics, serum urea nitrogen concentrations, and manure nitrogen of finishing beef steers," *J. Anim. Sci.* 12, 3421–3432, 2006; and R. Todd, N. Cole, R. Clark,

state that agriculture is responsible for over 80% of ammonia emissions, and that confined animal facilities (CAFs) and fertilizer application account for 57% and 36%, respectively.<sup>51</sup> Moreover, the commenters assert that "[n]o real analysis of control potential is offered" in the State's precursor demonstration.

Third, with respect to the State and the EPA's evaluation of modeled ambient PM<sub>2.5</sub> responses to ammonia emission reductions in 2024, Public Justice states that, in the low (30%) emission scenario, 2 of 15 monitoring sites have responses over the 0.2 µg/m<sup>3</sup> recommended threshold and that the EPA argues "with extremely biased evidence, that the results at one of the two monitors could be ignored and that ammonia emissions area likely underestimated." The commenters assert that "EPA points to evidence that 'the State did not discuss' to discount the results" for the Madera monitor, and that the EPA "offers no excuse for discrediting the results at the other monitor."

Fourth, the commenters claim that the EPA's evaluation of the precursor demonstration looked at supplemental ammonia emission studies but ignored supplemental studies showing that NO<sub>x</sub> emissions from soil ("soil NO<sub>x</sub>") may be significantly underestimated. Public Justice states that the State and the EPA "assert that NO<sub>x</sub> emissions will be significantly reduced by 2024 even though the Plan currently does not explain how those NO<sub>x</sub> reductions will occur." The commenters state that such approach is "a one-sided attempt to explain away modeled results that ammonia contributes significantly to PM<sub>2.5</sub>" in the SJV and cannot overcome the Act's presumption that precursors must be controlled.

Finally, beyond the assertion that the State's precursor demonstration with respect to ammonia, and the EPA's proposed approval of it are incorrect, the commenters also argue that the State's failure to address ammonia as a precursor to PM<sub>2.5</sub> has disparate impacts on certain communities within SJV and "avoids difficult political fights by sacrificing communities of color." Finally, the commenters refer to a 2021 research study that estimates that 1,690

"Reducing crude protein in beef cattle diet reduces ammonia emissions from artificial feedyard surfaces," *J. Environ. Qual.* 35, 404–411, 2006.

<sup>51</sup>Public Justice Comment Letter, 5–6, 16, citing See EPA Region IX, "Technical Support Document, EPA Evaluation of PM<sub>2.5</sub> Precursor Demonstration, San Joaquin Valley PM<sub>2.5</sub> Plan for the 2006 PM<sub>2.5</sub> NAAQS." We note that our TSD in turn cited to State data sources, including the 2018 PM<sub>2.5</sub> Plan, App. G, Figure 3.

people in California die annually due to agricultural ammonia emissions.<sup>52</sup>

### 3. The EPA's Reconsidered Proposal

The EPA agrees with certain points made by the commenters with respect to ammonia and disagrees with others. Overall, based on the adverse comments from Public Justice and a re-evaluation of the information provided by the State, we now conclude that the weight of evidence is insufficient to establish that ammonia does not contribute significantly to PM<sub>2.5</sub> levels above the NAAQS in the SJV. The EPA's further evaluation indicates that it is appropriate to retain the statutory presumption that ammonia must be regulated as a precursor for the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV. Accordingly, if the EPA finalizes disapproval of the State's ammonia precursor demonstration, ammonia would remain a plan precursor, and the SJV would remain subject to the requirements to identify and implement BACM, BACT, and additional feasible measures on sources of ammonia emissions.

We first address the portion of the comment related to the sensitivity of the modeled PM<sub>2.5</sub> response to reductions in ammonia emissions and then turn to the portion of the comment addressing the amount of ammonia reductions that may be available.

#### a. Comments Related to Sensitivity Modeling Results

The measured ammonium nitrate portion of the annual average PM<sub>2.5</sub> concentration in Bakersfield in 2015 was 5.2 µg/m<sup>3</sup>.<sup>53</sup> This is well above the EPA's recommended threshold in the PM<sub>2.5</sub> Precursor Guidance. However, the PM<sub>2.5</sub> SIP Requirements Rule, as interpreted by that guidance, provides the option for a State to conduct an analysis of the sensitivity of ambient PM<sub>2.5</sub> concentrations to emission reductions of a precursor pollutant to evaluate the significance of that precursor,<sup>54</sup> as the State did for the 2012

<sup>52</sup>Public Justice Comment Letter, 18. See Domingo, N.G.G., Balasubramanian, S., Thakrar, S.K., Clark, M.A., Adams, P.J., Marshall, J.D., Muller, N.Z., Pandis, S.N., Polasky, S., Robinson, A.L., Tessum, C.W., Tilman, D., Tschofen, P., & Hill, J.D., "Air quality-related health damages of food," *Proceedings of the National Academy of Sciences* (Vol. 118, Issue 20, p. e2013637118), 2021, available at <https://doi.org/10.1073/pnas.2013637118>, attached as Exhibit 35. See SUPPLEMENTARY INFORMATION for "Air quality-related health damages of food," Table S2 ("Annual emissions and mortality caused by agricultural production in the 10 states where emissions of (A) primary PM<sub>2.5</sub>, (B) NH<sub>3</sub>, (C) NO<sub>x</sub>, (D) SO<sub>2</sub>, and (E) NMVOCs lead to the highest total mortality").

<sup>53</sup>86 FR 74310, 74318 and 2018 PM<sub>2.5</sub> Plan, App. G, 3.

<sup>54</sup>40 CFR 51.1006(a)(1)(ii).

annual PM<sub>2.5</sub> NAAQS in the SJV. Thus, the concentration-based contribution analysis alone (*i.e.*, the 5.2 µg/m<sup>3</sup>) is not necessarily determinative of a precursor's significance.

The commenters stated that reliance on a sensitivity-based test for 2024 ignores the statutory imperative for expeditious attainment. But, as noted in the preamble for the PM<sub>2.5</sub> SIP Requirements Rule in explaining the rationale for a sensitivity-based test, "if conditions in a particular area are such that control of sources of one or more precursors does not reduce PM<sub>2.5</sub> concentrations in the area, then those controls will not help the area attain (expeditiously or otherwise)." <sup>55</sup> Thus, if a precursor demonstration were to show that control of a particular precursor is not effective for reaching attainment, then the absence of such control would not violate the requirement for expeditious attainment.

As commenters noted, the State relied on its sensitivity-based contribution analysis for a future year (2024) to evaluate the significance of ammonia as a precursor to ambient PM<sub>2.5</sub> concentrations in the San Joaquin Valley. In our 2021 Proposed Rule, we discussed the State's selection of 2024 as an acceptable analysis year, given the projected steep decline in ambient PM<sub>2.5</sub> sensitivity to ammonia reductions over time as a result of projected changes in emissions (*i.e.*, large NO<sub>x</sub> emission reductions as contemplated in the Plan, through existing measures and aggregate commitments), consistent with the facts and circumstances recommended for consideration in the EPA's PM<sub>2.5</sub> Precursor Guidance.<sup>56</sup>

The PM<sub>2.5</sub> Precursor Guidance provides for consideration of sensitivity in an appropriate future year.<sup>57</sup> Based on the State's control strategy, including baseline emission reduction measures and its control measure and aggregate tonnage commitments, the State estimated it would achieve over 200 tpd NO<sub>x</sub> reductions by 2024, representing over 60% of the 2013 base year emissions inventory for NO<sub>x</sub>.<sup>58</sup> Existing baseline measures already in the SIP are projected by the State to reduce annual average NO<sub>x</sub> emissions in the SJV by 173.5 tpd, which is 83.7% of the 207.38 tpd of NO<sub>x</sub> reductions modeled to attain the 2012 annual PM<sub>2.5</sub> NAAQS. Over 90% of the baseline NO<sub>x</sub> reductions between 2013 and 2025 are due to the existing mobile source control

program.<sup>59</sup> These reductions will occur regardless of any EPA action on the precursor demonstration or the 2018 PM<sub>2.5</sub> Plan as a whole. Similarly, additional measures adopted by the State through the end of 2021 further reduce NO<sub>x</sub> emissions. Given the large NO<sub>x</sub> emission reductions projected to occur by 2024 and 2025, the EPA has concluded that the 2024 sensitivity model results better represent the atmospheric chemistry around the attainment date and in subsequent years than sensitivity modeling results from 2013 and even 2020.<sup>60</sup> Due to continued existing and anticipated NO<sub>x</sub> reductions, the apparent PM<sub>2.5</sub> benefit of ammonia reductions in earlier years declines with time and does not reflect the ultimate, lower, benefit of such controls near the attainment year and later.

Thus, the EPA reasons that the Plan's baseline and additional control measures will change (and have already changed) the atmospheric chemistry conditions in the SJV, leading to ambient PM<sub>2.5</sub> formation that is much less sensitive to ammonia emission reductions in the attainment year. We maintain that the State's reliance on its sensitivity-based contribution analysis for 2024 to evaluate the significance of ammonia as a precursor is reasonable, well supported, and consistent with the PM<sub>2.5</sub> SIP Requirements Rule and EPA guidance.

The commenter correctly states that 2 of 15 sites in the 2024 model scenario based on a 30% reduction in ammonia emission were modeled to have an ambient PM<sub>2.5</sub> response greater than the EPA's recommended contribution threshold of 0.2 µg/m<sup>3</sup>. However, we disagree with the commenter's characterization that our further review of the sensitivity of the Madera and Hanford sites to ammonia emission reductions was argued "with extremely biased evidence."<sup>61</sup>

For the Madera monitor (estimated sensitivity of 0.21 µg/m<sup>3</sup> in 2024 to a 30% ammonia emission reduction), the commenter refers to the EPA's statement that the 2018 PM<sub>2.5</sub> Plan did not discuss the evidence for the 2013 monitored concentrations at this site being biased high (as a matter of the physical recordings of the monitor). However, the EPA did reference the State's prior analysis of such evidence, which we

considered in our evaluation.<sup>62</sup> Aside from pointing out that this analysis was not included in the Plan itself, the comment does not offer analysis to the contrary, and the EPA continues to think that we reasonably weighed the technical information before us and, given the role of the 2013 monitored data in the sensitivity modeling conducted by the State, correctly concluded that "if more typical Madera concentrations were used, it is likely that the 2024 Madera response to ammonia reductions would be below the contribution threshold" and that the extra year of NO<sub>x</sub> reductions from 2024 to 2025 would likely decrease the sensitivity below the recommended 0.2 µg/m<sup>3</sup> threshold.

We further disagree with the commenter's assertion that we offered no reason for giving less weight to modeled sensitivity results for the Hanford monitor (estimated sensitivity of 0.26 µg/m<sup>3</sup> in 2024 to a 30% ammonia emission reduction). We stated that we gave both Madera and Hanford modeled sensitivity lower weight in our overall assessment of ammonia as a precursor. Specifically for Hanford, we described evidence that the modeled sensitivity there was likely overestimated. That evidence included an independent study using data from the 2013 DISCOVER-AQ campaign that "found that the [CMAQ] model underestimated ammonia at Hanford by a roughly a factor of four or five."<sup>63</sup> In our assessment, if the model's ammonia concentrations better matched the observations then there would be more of an ammonia excess in the model, and the modeled response to ammonia reductions would be lower.

More broadly, prior to publishing the 2021 Proposed Rule, the EPA reviewed available research including from supplemental materials from CARB, and found a consistent theme based on modeling analyses and ambient measurement studies—that "there is a large amount of ammonia left over after reacting with NO<sub>x</sub>, so that ammonia emission reductions would be expected mainly to reduce the amount of ammonia excess, rather than to reduce the particulate ammonium nitrate."<sup>64</sup> It is important to note that this ammonia excess is *measured*, and is independent

<sup>62</sup> 86 FR 74310, 74320, fn. 91, and fn. 92. This analysis concluded that 2011–2013 Madera data did not fit the geographic pattern historically seen in relation to other monitors but returned to the historic pattern after corrections were made to the monitoring instrument operating procedures. Concentrations were estimated to be about 10% high during the period in question.

<sup>63</sup> 86 FR 74310, 74320.

<sup>64</sup> *Id.* See also, EPA's Ammonia Precursor TSD.

<sup>55</sup> 81 FR 58010, 58025.

<sup>56</sup> 86 FR 74310, 74320–74321 and PM<sub>2.5</sub> Precursor Guidance, 35.

<sup>57</sup> PM<sub>2.5</sub> Precursor Guidance, 35.

<sup>58</sup> 86 FR 74310, 74327, Table 4.

<sup>59</sup> 2018 PM<sub>2.5</sub> Plan, App. B, Table B–2.

<sup>60</sup> We address the potential impact of ammonia emissions on the requirement for expeditious attainment in our re-evaluation of the attainment demonstration in section II.C.3, below.

<sup>61</sup> Public Justice Comment Letter, 18.



of any assumptions about the size of the ammonia or NO<sub>x</sub> emissions inventories, and also independent of any uncertainties in the modeling exercise. The concerns raised by Public Justice about relative levels of ammonia and NO<sub>x</sub> estimation are not sufficient to cause the EPA to revise the conclusion that PM<sub>2.5</sub> is likely to have low sensitivity to ammonia reductions, which is supported by the actual observed conditions. The ambient measurement evidence is strong and leads the EPA to believe that the modeled response to ammonia in the State's precursor demonstration may be overestimated. Therefore, we maintain that the EPA may give lower weight to the modeled sensitivities of ambient PM<sub>2.5</sub> concentrations to ammonia emission reductions at the Madera and Hanford sites.

The commenter states that the EPA's argument on the relative levels of ammonia and NO<sub>x</sub> emissions looks at such ammonia studies but "ignores supplemental studies showing that . . . soil NO<sub>x</sub> emissions [may be significantly underestimated]." <sup>65</sup> Unlike the general consensus in the ammonia studies described above, with respect to the amount of NO<sub>x</sub> emitted by soil in the SJV the EPA believes that there is conflicting research. A conclusion of Almaraz et al. (2018) and Sha et al. (2021) cited by the commenters is that soil NO<sub>x</sub> emissions are underestimated, and that they comprise 30–40% of total NO<sub>x</sub> emission in California. While higher levels of soil NO<sub>x</sub> (or NO<sub>x</sub> more generally) would tend to increase the modeled sensitivity of ambient PM<sub>2.5</sub> to ammonia, we maintain that there is not a sufficient basis to conclude that higher soil NO<sub>x</sub> emissions should be used in the air quality modeling for the SJV. <sup>66</sup>

In contrast to the studies just cited, Guo et al. (2020) <sup>67</sup> did not find such a discrepancy in emissions estimates,

concluding that soil NO<sub>x</sub> is about 1% of anthropogenic NO<sub>x</sub> emissions. The fraction of nitrogen applied as fertilizer released as NO<sub>x</sub> to the atmosphere was estimated by Almaraz et al. to be 15%, while seven other studies reviewed by Guo et al. estimated it to be 2% or less. Yet Almaraz et al., Sha et al., and Guo et al. all reported high agreement between their modeled and observed soil NO<sub>x</sub> emissions. The Almaraz et al. study acknowledged the limited number of surface measurements that were available for purposes of comparing the model results and the difficulty in comparing the model results to the observations and noted the need for more field measurements. Guo et al. stated that obtaining an emission factor correlating NO<sub>x</sub> emissions to fertilizer application from the data available in various studies (including Almaraz et al.) would be "difficult or impossible" due to the sparsity of data collected in terms of sampling length, sampling frequency, and the episodic nature of nitrogen gas emissions from soil.

In light of the uncertainties and disagreements among studies, the EPA does not believe that available research provides sufficient certainty about the magnitude and proportion of soil NO<sub>x</sub> emissions attributable to agricultural fertilizer application to require substantial revisions in the NO<sub>x</sub> emissions inventory nor the PM<sub>2.5</sub> modeling at this time.

In addition, as just described, multiple studies of ambient measurements show excess ammonia in the atmosphere, which is strong evidence of low sensitivity to ammonia reduction that is independent of the accuracy of estimates of precursor emissions from any source, including soil NO<sub>x</sub>, and independent of any modeling. Thus, we disagree that the EPA "ignored" the supplemental soil NO<sub>x</sub> studies; we were aware of and considered them, but they did not change our conclusion.

#### b. Comments Related to Scale of Potential Ammonia Emission Reductions

The 2018 PM<sub>2.5</sub> Plan includes modeling of 30% and 70% reductions in ammonia emissions and focuses on the results of the 30% reduction based on the assertion that the area could not achieve more than a 30% decrease in ammonia emissions. Public Justice questions the basis for the assertion that no more than 30% reductions are available. In this section, we examine, based on the submission, the PM<sub>2.5</sub> Precursor Guidance, and the Public Justice comment, the ammonia reductions that may be available in the

SJV. Specifically, we explore the uncertainty with respect to both the current state of ammonia emissions and controls in the SJV and available research examining additional control options that may be available. We conclude that, based on the information before us, the 2018 PM<sub>2.5</sub> Plan does not provide sufficient support for the assertion that 30% is a reasonable upper bound on available ammonia reductions in the SJV.

The District presented its analysis of ammonia control for the primary ammonia source categories in the SJV in Appendix C, section C.25 ("Ammonia in the San Joaquin Valley") of the 2018 PM<sub>2.5</sub> Plan. The EPA had reviewed this analysis for our assessment in the 2021 Proposed Rule that 30% was, for analytical purposes, a reasonable upper bound for ammonia emission reductions in the SJV, and referred to prior EPA analysis for our action on the 2006 24-hour PM<sub>2.5</sub> NAAQS portion of the 2018 PM<sub>2.5</sub> Plan. <sup>68</sup> In evaluating the Public Justice comments on the potential control of ammonia, however, we have re-evaluated other portions of the 2018 PM<sub>2.5</sub> Plan, including Appendix C, section C.25 and Appendix G, <sup>69</sup> and reviewed the studies cited by the commenters, as well as others from the EPA's own literature search.

As noted in the EPA's PM<sub>2.5</sub> Precursor Guidance, <sup>70</sup> and consistent with the PM<sub>2.5</sub> SIP Requirements Rule (40 CFR 51.1010(a)(2)(ii), 51.1006(a)(1)(ii)), the EPA may require the State to identify and evaluate potential control measures for a precursor to determine the potential emissions reductions achievable, as a part of the precursor analysis. The guidance states that this evaluation is particularly important when the PM<sub>2.5</sub> response to a 30% reduction in precursor emissions is close to the contribution threshold. In the case of a nonattainment area classified as Serious, this analysis would include identification and evaluation of measures that would constitute BACM/BACT level controls for such pollutant. <sup>71</sup>

<sup>68</sup> 86 FR 74310, 74319. See also, 85 FR 17382, 17395 (March 27, 2020), and EPA's PM<sub>2.5</sub> Precursor TSD, 13.

<sup>69</sup> See, e.g., 2018 PM<sub>2.5</sub> Plan, App. G, 13, where CARB states that "CARB staff, District staff, and the public process have not identified specific controls that are technologically and economically feasible to achieve reductions at the low end of the recommended sensitivity range (i.e., 30 percent), much less at the upper end of the range."

<sup>70</sup> PM<sub>2.5</sub> Precursor Guidance, 31.

<sup>71</sup> The PM<sub>2.5</sub> Precursor Guidance provides: "[c]onsistent with the PM<sub>2.5</sub> SIP Requirements Rule, the EPA may in some cases require air agencies to evaluate available emissions controls in support of a precursor demonstration that relies on a

<sup>65</sup> Public Justice Comment Letter, 18. Public Justice cited Almaraz et al. (2018), "Agriculture is a major source of NO<sub>x</sub> pollution in California," *Science Advances*, 4(1), doi:10.1126/sciadv.aao3477, 2018, available at <https://advances.sciencemag.org/content/4/1/eaao3477>; and Sha et al. (2021), "Impacts of soil NO<sub>x</sub> emission on O<sub>3</sub> air quality in rural California," *Environmental Science & Technology*, 55(10), 7113–7122, available at: doi:10.1021/acs.est.0c06834; available at <https://pubs.acs.org/doi/10.1021/acs.est.0c06834>.

<sup>66</sup> See also, EPA Region IX, "Response to Comments Document for the EPA's Final Action on the San Joaquin Valley Serious Area Plan for the 2006 PM<sub>2.5</sub> NAAQS," June 2020, 148 and 158.

<sup>67</sup> Guo et al. (2020), "Assessment of Nitrogen Oxide Emissions and San Joaquin Valley PM<sub>2.5</sub> Impacts From Soils in California," *Journal of Geophysical Research: Atmospheres*, 125(24), doi: 10.1029/2020JD033304; available at <https://doi.org/10.1029/2020JD033304>.

Even when the modeled responses are below the recommended 0.2  $\mu\text{g}/\text{m}^3$  contribution threshold, or when particular responses are given less weight as we have discussed above for Madera and Hanford, the outcome of a sufficiently thorough controls evaluation and its conclusions on achievable emissions reductions may be important information for the EPA to consider in deciding whether to approve the precursor demonstration. Here, the State's ammonia precursor demonstration strongly relies on the assertion that no more than 30% ammonia reductions below current levels is achievable, but there is not a sufficiently thorough controls evaluation to support that assertion. Because the 30% value has not been adequately supported, the EPA cannot evaluate whether the modeled  $\text{PM}_{2.5}$  reductions associated with a 30% reduction in ammonia represent the reductions that may be possible in the SJV.

The EPA also emphasizes that the 30% control threshold is part of an analytical test to help evaluate whether the State must regulate ammonia as a precursor for the 2012 annual  $\text{PM}_{2.5}$  NAAQS in the area; it does not mean that if the State cannot control 30% of ammonia with BACM/BACT-level controls that there is per se no need to regulate ammonia. For example, if control of 25% of ammonia is necessary for attainment of the  $\text{PM}_{2.5}$  NAAQS, then the fact that this is below 30% is irrelevant. Our attention to the 30% threshold in this notice is to help interpret the  $\text{PM}_{2.5}$  responses to modeled ammonia emissions reductions in the State's precursor demonstration, which modeled a 30% reduction. This point is important analytically because, insofar as potential ammonia reductions could be larger than 30%, the modeled responses could be larger than those relied upon in the State's precursor analysis to support its determination that ammonia is not a significant precursor.

With respect to the State's assertion that 30% is a reasonable upper bound for potential ammonia emission

sensitivity analysis. [See 40 CFR 51.1009(a)(2) and 51.1010(a)(2).] It is particularly important for states to evaluate available controls where the recommended contribution threshold—that is, the threshold used for identifying an impact that is 'insignificant'—is close to being exceeded at the low end of the recommended sensitivity range (e.g., 30 percent). In these cases, the EPA may determine that to sufficiently evaluate whether the area is sensitive to reductions, the State must determine the potential precursor emission reductions achievable through the implementation of available and reasonable controls for a Moderate area (or best controls for a Serious area).''  $\text{PM}_{2.5}$  Precursor Guidance at 31.

reductions, we agree with the commenters that the analysis of potential ammonia controls provided by the State and the evaluation of that information by the EPA lacked detailed support and is not a sufficient basis for the EPA to affirm that 30% is a reasonable upper bound for potential ammonia emission reduction in the SJV. This, in turn, affects the EPA's interpretation of the results of modeled responses to ammonia reductions. There are two general deficiencies in the submitted analysis that create uncertainty as to the potential for ammonia emission reductions, as discussed below: (1) incomplete quantification of existing ammonia emission reductions from the largest sources of ammonia; and (2) incomplete consideration and evaluation of potential additional controls of ammonia emissions for sources in the SJV. We walk through these uncertainties for each of the largest sources of ammonia in the SJV (i.e., CAFs and fertilizer application).

As an initial matter, the commenters state that "[the State] argues, and EPA agrees, that only the minimal 30 percent control level is reasonable" despite major ammonia sources never having been regulated in the SJV and the relatively easier and cheaper sources of emission reductions relative to  $\text{NO}_x$ . We understand this reference to "major ammonia sources" to mean the main source categories of ammonia emissions in the SJV, including CAFs and fertilizer application, which the State estimated to emit 57% and 36%, respectively, of the annual average ammonia emissions in the SJV in 2013.<sup>72</sup>

We agree with the commenters that neither CARB nor the District have imposed controls specifically to regulate ammonia. We note, however, that ammonia-specific controls are not required for approval of an ammonia precursor demonstration. Moreover, although there are not ammonia-specific controls in place for the largest source categories in the SJV, many sources of ammonia are in fact regulated by District rules, such as Rule 4570 ("Confined Animal Facilities"), Rule 4565 ("Biosolids, Animal Manure, and Poultry Litter Operations"), and Rule 4566 ("Organic Material Composting Operations"), which include enforceable requirements for VOC emissions that would, in general, achieve some degree of ammonia emission reductions. We agree with the

<sup>72</sup> See Public Justice Comment Letter, 6, citing EPA Region IX, "Technical Support Document, EPA Evaluation of  $\text{PM}_{2.5}$  Precursor Demonstration, San Joaquin Valley  $\text{PM}_{2.5}$  Plan for the 2006  $\text{PM}_{2.5}$  NAAQS."

general assertion, presented by the District in section C-25 ("Ammonia in the San Joaquin Valley") of Appendix C of the 2018  $\text{PM}_{2.5}$  Plan, that some management practices to reduce VOCs in those rules also collaterally reduce ammonia emissions by limiting ammonia formation and volatilization, even though ammonia reductions are not legally required by these measures.<sup>73</sup>

Although we expect that existing VOC regulations are achieving a degree of ammonia control, there are multiple reasons why it is not clear, based on the record before us, how much reduction is being achieved, and thus how much additional reduction may be available. For example, regarding CAFs, as the EPA has previously noted,<sup>74</sup> the State has not sufficiently substantiated its calculation of 100 tpd of ammonia emission reductions attributed to Rule 4570. In the 2018  $\text{PM}_{2.5}$  Plan, the State referenced an outdated analysis from 2006 that relied on a different baseline emissions inventory, but has not supplemented this analysis, or reconciled it with more recent emissions inventory data.<sup>75</sup> We note that CARB has provided the EPA with significantly lower estimates of ammonia emission reductions achieved by SJVUAPCD Rule 4570 based on more recent calculations of reductions from a 2012 baseline emissions inventory.<sup>76</sup> The 2018  $\text{PM}_{2.5}$  Plan does not reconcile these differences, nor update the emission reduction estimate from the 2006-era analysis to the emissions inventory basis of the 2018  $\text{PM}_{2.5}$  Plan.

<sup>73</sup> See, e.g., 2018  $\text{PM}_{2.5}$  Plan, App. C, C-313 (for CAFs). The lack of controls specifically regulating ammonia emissions from the largest source categories through enforceable SIP requirements in the SJV is not an inherent deficiency of the precursor demonstration, but it does result in challenges for determining the potential for ammonia emission controls (i.e., in determining the reductions that have already been achieved, and what additional reductions are available).

<sup>74</sup> 81 FR 69396, 69397-69398 (October 6, 2016).

<sup>75</sup> 2018  $\text{PM}_{2.5}$  Plan, App. C, C-311 to C-339 and SJVUAPCD, "Final Draft Staff Report, Proposed Re-Adoption of Rule 4570 (Confined Animal Facilities)," June 18, 2009, at Appendix F, "Ammonia Reductions Analysis for Proposed Rule 4570 (Confined Animal Facilities)," June 15, 2006 (discussing various assumptions underlying the District's calculation of ammonia emission factors without identifying relevant emissions inventories).

<sup>76</sup> Email dated September 3, 2015, from Gabe Ruiz, CARB, to Larry Biland and Andrew Steckel, EPA Region IX, regarding "SJV Livestock Ammonia Emissions with and without Rule 4570." This email notes that 2011 ammonia emissions (pre-rule) were 316.8 tpd, 2012 emissions (without rule) were 323.8 tpd, and 2012 emissions (with rule) were 250.9 tpd. Thus, application of Rule 4570 would have achieved either 72.9 tpd of ammonia reductions, measured within 2012 with and without the rule, or 65.9 tpd, measured from the 2011 level (without rule) to the 2012 level (with rule).

In short, although we agree that some existing VOC controls will also result in ammonia reductions, a more detailed analysis is required to determine both the effectiveness of existing controls, and the additional controls that may be available. In the following, the EPA notes various uncertainties concerning ammonia emissions and in the amount of reductions achieved by specific rules as a byproduct of the existing VOC control measures. For a number of key source categories, ammonia measures require additional analysis to evaluate their potential to achieve additional emissions reductions, in part based on research studies included as exhibits to the Public Justice Comment Letter.

For CAFs, the District discusses in detail how Rule 4570 is structured (*e.g.*, to address varying types of CAFs); the five main CAF operations/emission sources: feeding, housing (including distinctions for housing configurations), solid waste, liquid waste, and land application of manure; the control menu requirements for each of those five operations; and research papers that estimate ammonia emission reductions from some of the measures.<sup>77</sup> However, the 2018 PM<sub>2.5</sub> Plan does not specify, even in an aggregated form, which control measures were selected by CAFs in their permits-to-operate with the District for each of the five operations and the scale of those selections by CAF size, nor does it quantify the emission reductions from those selections and scales. Thus it is unclear what level of ammonia control is being achieved, and, importantly for the precursor demonstration, unclear what level of further ammonia control may be possible. This uncertainty is increased by several provisions in Rule 4570 that allow CAF owners/operators to implement “alternative mitigation measures”<sup>78</sup> *in lieu of* the mitigation measures listed in the rule, without any requirement to ensure that such alternative mitigation measures achieve any particular level of ammonia emission reductions, or any ammonia reductions at all.<sup>79</sup>

Furthermore, for certain requirements, the 2018 PM<sub>2.5</sub> Plan assumes that a less effective control measure may be implemented given that the more effective control measure may be more costly. For instance, the District describes some research studies that relate to one or more of the options, but it is not clear whether and how the requirements of each option align with the practices evaluated in each study. The District cites a 2005 University of California study that manure from lagoons, diluted with irrigation water, and applied via surface gravity irrigation systems (*e.g.*, not applied with a drag hose or similar apparatus) commonly minimized ammonia losses from volatilization to the air to 10% or less.<sup>80</sup> However, it is not clear how the requirements of option H.2.a (liquid manure treated in an aerobic or anaerobic lagoon) or option H.2.b (24-hour limit for liquid manure standing on fields) may correspond to the study, whether any particular level of lagoon treatment or dilution prior to application would be needed, nor whether a combination of the two would be required to minimize ammonia losses to air to that degree.

For option H.2.c, the District states that use of a drag hose or similar apparatus could significantly reduce ammonia emissions, but without specifying how much or pointing to any supporting document, and only qualitatively asserting a relatively higher cost for using such equipment, and its limitations when a crop is growing.<sup>81</sup> The District states that “[a]pplication of liquid or slurry manure with a drag hose or similar apparatus could result in significant [ammonia] reductions, but has higher costs compared to flood or furrow irrigation of liquid manure.”<sup>82</sup> However, higher cost does not necessarily translate to the measure being economically infeasible, and thus the option to use flood or furrow irrigation alone may not represent the most appropriate method or level of control of ammonia for the land application of liquid manure. As a

result, the District has not demonstrated that additional reductions are not feasible.

The District assumes that all dairies and other cattle facilities would select option H.2.b (24-hour limit for liquid manure standing on fields) and cites two studies that suggest substantial ammonia emission reductions from this limitation, assuming no ammonia emissions into the air after soil incorporation.<sup>83</sup> Based on one study, dairy CAF operations in the SJV would have hypothetically already reduced ammonia emissions to the air from land application of liquid manure from 66% ammonium nitrogen to 25% ammonium nitrogen by implementing option H.2.b (a 41% absolute reduction, or 62% relative reduction). Uncertainty about the options that are being chosen and implemented by regulated entities gives rise to uncertainty in the ammonia emission reductions that are being achieved. The permits-to-operate submitted by each dairy CAF are required to indicate which option has been selected.<sup>84</sup> Accordingly these permits, and associated compliance records, should contain information that would help to address this uncertainty. Furthermore, if injection via drag hose or similar apparatus (option H.2.c) is economically feasible, even if more expensive, implementation of such a measure could further reduce ammonia by 25% based on the same study, at least for a portion of the operating cycle (*e.g.*, when crops are not growing). Lastly, a combination of measures (*e.g.*, requiring that liquid manure be both treated in an anaerobic lagoon, aerobic lagoon, or digester, and that it be incorporated into the soil within 24 hours) or adjustment to existing options (*e.g.*, requiring incorporation of liquid manure within 6 hours, rather than 24 hours, and during cooler hours when ammonia volatilization is less) could hypothetically reduce ammonia emissions at these sources by more than 30%.<sup>85</sup>

In general, with respect to dairy CAFs, on a qualitative basis CAF operators have likely reduced ammonia emissions

<sup>77</sup> 2018 PM<sub>2.5</sub> Plan, App. C, C-312 to C-323.

<sup>78</sup> “Alternative Mitigation Measure” is defined in SJVUAPCD Rule 4570 as “a mitigation measure that is determined by the APCO, [CARB], and EPA to achieve reductions that are equal to or exceed the reductions that would be achieved by other mitigation measures listed in this rule that owners/operators could choose to comply with rule requirements.” SJVUAPCD Rule 4570 (amended October 21, 2010), section 3.4. Because SJVUAPCD Rule 4570 explicitly applies only to VOC emissions, the requirement for equivalent “reductions” in section 3.4 applies only to VOC emission reductions and does not apply to ammonia emission reductions.

<sup>79</sup> See, *e.g.*, SJVUAPCD Rule 4570 (amended October 21, 2010) at section 5.6, Table 4.1.F.

<sup>80</sup> University of California, Division of Agricultural and Natural Resources, Committee of Experts on Dairy Manure Management, “Managing Dairy Manure in the Central Valley of California,” June 2005.

<sup>81</sup> 2018 PM<sub>2.5</sub> Plan, App. C, C-323, referring to a 2008 report by Alberta Agriculture and Food (Canada), Albert Agriculture and Food, “Ammonia Volatilization from Manure Application,” February 2008 (“2008 Alberta Report”). That report estimates that injection into soil would reduce the average ammonium-nitrogen fraction loss (*i.e.*, to air) to 0% compared to incorporation within one day from surface application (25%) or compared to surface application with no incorporation (66%). 2008 Alberta Report, Table 2.

<sup>82</sup> 2018 PM<sub>2.5</sub> Plan, App. C, C-322 to C-323.

<sup>83</sup> 2018 PM<sub>2.5</sub> Plan, App. C, C-323, referring to two studies: the 2008 Alberta Report, and Chadwick et al. “Emissions of Ammonia, Nitrous Oxide and Methane from Cattle Manure Heaps: Effect of Compaction and Covering,” *Atmosphere Environment*, 39: 787–799 (2005); available at: <http://www.sciencedirect.com/science/article/pii/S135223100400994X>.

<sup>84</sup> Under District Rule 4570, section 5.1, owners/operators of CAFs subject to the rule must obtain a permit-to-operate for the facility, and that permit must include a facility emission mitigation plan, a facility emission inventory, and identify the mitigation measures selected for the facility.

<sup>85</sup> 2008 Alberta Report.

to a degree consistent with the options selected. However, there is not a quantitative basis to specify the degree and potential for further reduction. For some of the options within the menu of mitigation measures for each type of CAF in Rule 4570, there are research studies to support the basis of existing ammonia emission reductions. The generalized assumptions used by the State could be evaluated by an analysis of the options selected by CAFs in permits-to-operate with the District. Further assessment of available compliance records and examination of combinations of measures or adjustments to existing measures could help quantify additional potential ammonia emission reductions.

In addition, Public Justice cites several studies to support its assertion that reductions in agricultural ammonia emissions may be achieved through “strategies such as improving livestock feed to reduce excreted nutrients, altering manure storage and handling practices to prevent [ammonia] emissions, and improving synthetic fertilizer use efficiency,” and cites several studies to support this assertion.<sup>86</sup> The EPA considers these approaches to warrant examination as potential means to reduce ammonia and believes that more information regarding their efficacy as control measures and their economic and technical feasibility is needed to determine the amount of the potential additional ammonia control in the SJV.

For livestock feed, studies in 2005 and 2006 cited by the commenter found that “decreasing the crude protein concentration of beef cattle finishing diets based upon steam-flaked corn from 13 to 11.5 percent decreased ammonia emissions by 30 to 44 percent.”<sup>87</sup> A 2009 study cited by the commenter found that “one feedyard feeding distillers grains averaged 149 grams of ammonia-N per head per day (NH<sub>3</sub>-N/head/day) over nine months, compared with 82 g NH<sub>3</sub>-N/head/day at another feedyard feeding lower protein steam-flaked, corn-based diets.”<sup>88</sup> Nominally

this would represent a 45% reduction in ammonia emissions from manure by going to a lower protein diet. However, the net ammonia emission reduction either from reducing crude protein levels in feed, or by providing a lower protein steam-flaked, corn-based diet rather than a distiller grain diet is unclear given the role of protein intake on the time for beef cattle to reach market weight or on milk production for dairy cattle.

For manure handling and storage practices, a 2011 inventory of mitigation methods by Price et al. identifies many mitigation methods for various kinds of CAFs, some of which may reduce ammonia emissions by 50–90%.<sup>89</sup> For example, Method 44 (“Washing down dairy cow collecting yards”) involves areas where dairy cows are collected on a concrete yard prior to milking and, after each milking event, the urine and manure in the area are removed by pressure washing or by hosing and brushing, resulting in up to 90% ammonia emission reductions. Method 62 (“Cover solid manure stores with sheeting”) involves covering solid manure heaps with plastic sheeting, resulting in ammonia emission reductions up to 90%.<sup>90</sup> However, the authors note that, for both Method 44 and Method 62, reducing ammonia emission from the milking areas would increase the ammonium content of the slurry, potentially leading to higher ammonia emissions during storage and spreading, but by a lower amount than the initial reduction amount. Method 71 (“Use slurry injection application techniques”) involves shallow (5–10 cm

depth) or deep (25 cm depth) injection of slurry into the soil, resulting in ammonia emission reductions of 70% to 90%, respectively.

Mitigation methods are also described for other kinds of CAFs, such as pig farms and chicken farms. For example, Method 48 (“Install air-scrubbers or biotrickling filters to mechanically ventilated pig housing”) involves pig housing where specific technologies are used to capture up to 90% of the ammonia emissions into recirculation water that can then be used as a nitrogen-based fertilizer. Method 51 (“In-house poultry manure drying”) involves installation of ventilation/drying systems that reduce the moisture content of poultry litter, resulting in up to 50% ammonia emission reductions, though, as with the cattle examples, this could result in some increased emissions at subsequent steps (e.g., storing poultry litter).

In addition to the 2011 inventory of mitigation methods, in September 2017, the EPA and the U.S. Department of Agriculture, Natural Resource Conservation Service released the “Agricultural Air Quality Conservation Measures, Reference Guide for Poultry and Livestock Production Systems” (2017 EPA–USDA Reference Guide). This reference guide discusses air quality conservation measures relating to nutrition and feed management, animal confinement, manure management, land application, and other supplemental practices. Among other things it includes Appendix A.1 (“Table of Mitigation Effectiveness for Selected Measures”), which lists 12 measures that may reduce ammonia emissions by more than 30%, Appendix A.2 (“List of State Programs and Regulations for AFO Air Emissions”), and Appendix A.3 (“List of AFO Air Quality Programs & Land-Grant Universities”).

In sum, various research studies on mitigating ammonia emissions from CAFs suggest that there may be potential for additional ammonia reductions from activities such as animal feeding and housing to manure storage, handling, and land application. While the Plan refers to and describes some of the research studies described herein (e.g., the 2008 Alberta Report and the 2005 Chadwick paper), it is unclear the extent to which the higher emission reduction measures have been or could be implemented in the SJV and, when aggregated across all CAF operations, it remains unclear whether the total reduction from additional measures would be greater than the State’s estimate of maximum available

Rhoades, and K. Casey. 2009. “Effect of Feeding Distillers Grains on Dietary Crude Protein and Ammonia Emissions from Beef Cattle Feedyards.” In Proceedings of the Texas Animal Manure Management Issues Conference, 83–90.

<sup>89</sup> Public Justice Comment Letter, Exhibit 39. Exhibit 39 is: Price et al., “An Inventory of Mitigation Methods and Guide to their Effects on Diffuse Water Pollution, Greenhouse Gas Emissions and Ammonia Emissions from Agriculture, User Guide,” December 2011. For mitigation measures that may reduce ammonia emissions by 50–90%, for example, methods 43, 44, 47–51, 54–55, 62, 64, 70–71, and 73–74 on pages 70–71, 74–78, 81–84, 93–94, 105–108, and 110–112 respectively, achievable control efficiencies from these measures in the SJV would depend on an applicability and feasibility review.

<sup>90</sup> We note that District Rule 4570, Table 3.1, section F and Table 4.1, section F provide mitigation measure options for the storage of solid manure and separated solids from large dairy CAFs, including measures that involve covering dry manure piles and separated solids, respectively, outside of pens with a weatherproof covering from May through October. Thus, such mitigation measures, if selected, would not be required for the remaining four months of the year (June through September). Similar mitigation measure options in Rule 4570 for covering dry manure piles apply for beef feedlots, other cattle, swine, poultry, and other CAF types.

<sup>86</sup> Public Justice Comment Letter, 16–18.

<sup>87</sup> Public Justice Comment Letter, Exhibit 36, 9. Exhibit 36 is: Preece, Sharon L.M. et al., “Ammonia Emissions from Cattle Feeding Operations,” Texas A&M AgriLife Extension Service, referring to Cole, N.A., R.N. Clark, R.W. Todd, C.R. Richardson, A. Gueye, L.W. Greene, and K. McBride, “Influence of Dietary Crude Protein Concentration and Source on Potential Ammonia Emissions from Beef Cattle Manure,” *Journal of Animal Science* 83(3): 722 (2005); and Todd, R.W., N.A. Cole, and R.N. Clark, “Reducing Crude Protein in Beef Cattle Diet Reduces Ammonia Emissions from Artificial Feedyard Surfaces.” *Journal of Environmental Quality*. 35(2), 404–411 (2006).

<sup>88</sup> Public Justice Exhibit 36, 10, referring to a study by Todd, R.W., N.A. Cole, D.B. Parker, M.

reductions.<sup>91</sup> Accordingly, the EPA concludes that the available information in the Plan is insufficient to conclude that the State has sufficiently examined and justified its estimate for the ammonia emission reductions that may be available from CAFs, which emit a majority of the ammonia in the SJV.

Regarding fertilizer application, Rule 4570 and Rule 4565 have provisions addressing the land application of manure from CAFs and of biosolids, animal manure, and poultry litter from composting operations (though these lack specific enforceable requirements for ammonia). However, more broadly, the District states that fertilizer application is the second largest ammonia source in the SJV and that the District does not have statutory authority to regulate such activities.<sup>92</sup> Notwithstanding this statement, the District describes key research assessing nitrogen in California, as well as regulations adopted by the California Water Resources Control Board, including orders adopted by the Central Valley Regional Water Quality Control Board (e.g., a Nutrient Management Plan), the Irrigated Lands Regulatory Program (e.g., a Nitrogen Management Plan), or other individual mechanisms.<sup>93</sup> These orders subject agricultural operators, including dairies, bovine feedlots, poultry operations, and crop farmers to “waste discharge requirements that protect both surface water and groundwater.”<sup>94</sup>

The EPA anticipates that such regulations are, in practice, likely to enhance the retention of nitrogen (whether from manure or nitrogen-based chemical fertilizers) for productive purposes in the SJV (e.g., growing crops and enhancing soil health) and limit the loss of nitrogen as pollution to water and air (e.g., potentially reduce ammonia emissions). However, to our knowledge, these regulations do not impose any enforceable requirement for ammonia emissions to the air, and thus render quantification difficult, as with Rule 4570.<sup>95</sup>

In addition, the District states that “the overall efficiency of nitrogen usage at California farms is expected to increase and emissions of reactive

nitrogen, including [ammonia], are expected to decrease significantly.” We agree that managing the amount of nitrogen applied to the environment should reduce the potential for pollution to air, water, and land. However, the District does not attempt to quantify or otherwise substantiate the scale and timing of such potential ammonia emission reduction benefits, nor their enforceability, nor does it attempt to analyze how much additional reductions may be available. Overall, the EPA finds that the available evidence is insufficient to conclude that the State has sufficiently examined and justified its estimate for the ammonia emission reductions that may be available from fertilizer application, the second largest ammonia emission source in the SJV.

#### c. The EPA’s Conclusion for Ammonia Precursor Demonstration

The EPA does not believe that the State has presented sufficient evidence that ammonia does not contribute significantly to PM<sub>2.5</sub> levels above the NAAQS. In the absence of an approved precursor demonstration, ammonia remains a plan precursor subject to the requirements of BACM, BACT, and additional feasible measures.

As discussed in our 2021 Proposed Rule,<sup>96</sup> the modeled response to 30% ammonia emissions reductions is above the EPA’s recommended contribution threshold of 0.20 µg/m<sup>3</sup> at two monitoring sites, Madera and Hanford, providing evidence that ammonia significantly contributes to PM<sub>2.5</sub> in SJV. In the previous proposal, we gave those responses less weight, because of specific evidence available for these sites that the responses were overestimated. For Madera, the monitoring data used in estimating the model response are biased high, and therefore the modeled response of 0.21 µg/m<sup>3</sup>, just above contribution threshold, is likely overestimated. For Hanford, several analyses showed ambient ammonia concentrations are underestimated, and so we believe that the modeled response of 0.26 µg/m<sup>3</sup> is likely overestimated. Supporting that conclusion is the evidence from ambient concentrations of excess ammonia relative to nitrate, which suggest that PM<sub>2.5</sub> responses to reductions of ammonia emissions would be dampened by the NO<sub>x</sub>-limited nature of ammonium nitrate formation in the SJV.

All of those considerations remain for the current proposal. But in light of comments received and re-evaluation of the available evidence, the EPA believes

we should give the Hanford response more weight, because that response would be larger if the ammonia reductions modeled were larger than the 30% assumed in the State’s precursor demonstration. The previous subsection gave several examples of the uncertainty and possible underestimation of the ammonia benefit of available control measures to the SJV. The EPA does not believe there is sufficient quantitative evidence to rely on 30% as the amount of achievable reductions, and as the amount to use an upper bound on the ammonia emission reductions modeled in the State’s precursor demonstration. A robust controls evaluation could show that a larger amount of reductions is achievable. If it is, then not only would the Hanford modeled response be larger, but additional monitoring sites could have a modeled response above the contribution threshold.

For example, with respect to the modeled 2024 ambient PM<sub>2.5</sub> responses to a 70% emission reduction, we note that the modeled high site of Bakersfield-Planz would have a response of 0.36 µg/m<sup>3</sup>, the site with the largest modeled response would be 0.75 µg/m<sup>3</sup> at Hanford, and six sites (including Hanford) would have modeled responses greater than 0.5 µg/m<sup>3</sup>. As a more modest example, interpolating between the available 30% and 70% modeled results, if 32% reductions are achievable, then three additional monitoring sites (Turlock, Merced-S. Coffee St., and Modesto) would reach the 0.2 µg/m<sup>3</sup> contribution threshold. The uncertainty over the ammonia response means that we cannot rely on 30% as an upper bound for ammonia emission reductions, and so the weight of evidence shifts relative to that in the 2021 Proposed Rule.

The discussion in this proposed rule, and the heavy reliance in the 2021 Proposed Rule, on the State’s use of a 30% upper bound for potential reduction from controls should not be interpreted as establishing a 30% “bright line” for deciding whether a precursor should be regulated. The PM<sub>2.5</sub> Precursor Guidance recommends that 30% to 70% emissions reductions be modeled as a way of implementing the PM<sub>2.5</sub> SIP Requirements Rule’s option in 40 CFR 51.1006(a)(1)(ii) for a State to assess the sensitivity of the atmospheric PM<sub>2.5</sub> to precursor emission reductions. The sensitivity of the atmosphere to reductions is a separate question from what reductions are achievable from controls; the latter is properly part of the control evaluation for BACM, BACT, and additional feasible measures. However, it is important to note that under 40 CFR

<sup>91</sup> In evaluating the aggregate reductions available across all sub-activities, it may be important to evaluate the extent to which reductions at one sub-activity may affect emissions at other stages of the process.

<sup>92</sup> 2018 PM<sub>2.5</sub> Plan, App. C, C–311.

<sup>93</sup> 2018 PM<sub>2.5</sub> Plan, App. C, C–339 to C–343.

<sup>94</sup> Id. at C–341.

<sup>95</sup> Unlike Rule 4570, which has been approved into the California SIP to limit VOC emissions, the State’s water-related regulations on fertilizer application have not been submitted for approval into the California SIP.

<sup>96</sup> 86 FR 74310, 74320.

51.1010(a)(2)(ii), the EPA may require a control evaluation to help the EPA evaluate the precursor demonstration. The PM<sub>2.5</sub> Precursor Guidance explains that the additional information from a control evaluation is particularly important when modeled precursor contributions are close to the threshold for a 30% reduction.<sup>97</sup> But the regulations and guidance do not establish an automatic “off ramp” for a State to be discharged from the requirements for BACM, BACT, and additional feasible measures via a showing that achievable reductions are below a particular percentage.

We have no evidence that emission reductions below current emissions levels from BACM on all ammonia sources in the SJV would be as large as 70%, but the lack of a developed record showing what ammonia control measures are feasible and what they could achieve makes it harder for the EPA to assess this point. We also lack sufficient evidence to conclude that reasonable ammonia control measures could achieve no more than 30% reductions, and so cannot rely on that supposition in weighing the modeled responses to reductions and other evidence. Better quantification of the possible ammonia reductions from current levels that could result from additional controls would help resolve this issue. Reconciliation of modeled sensitivity with that expected from ambient studies would also be appropriate.

The EPA has re-examined the 2024 sensitivity analyses to both 30% and 70% ammonia emission reductions in light of the uncertainty that 30% represents a reasonable upper bound for potential ammonia emission reductions. We note that the State modeled 30% reduction scenarios and predicted ambient PM<sub>2.5</sub> responses above 0.2 µg/m<sup>3</sup> at 2 of 15 sites in 2024; and modeled the 70% reduction scenarios and predicted responses above 0.2 µg/m<sup>3</sup> at all monitors in 2024.<sup>98</sup> The EPA maintains that the State’s reliance on its sensitivity-based contribution analysis for a future year (2024) to evaluate the significance of ammonia as a precursor is reasonable, well supported, and consistent with the EPA’s guidance. There are also good reasons for giving less weight to the modeled responses at the Madera and Hanford sites, although those are tempered by the consideration that there is not good support for limiting the modeled ammonia reductions to 30%, leading to the possibility of larger responses at

Hanford and of additional sites with responses above the contribution threshold.

The weight of the evidence, including at least one site above the EPA’s recommended contribution threshold and the possibility of additional ones depending on the unknown amount of reductions achievable, favor retaining the presumption that ammonia must be regulated as a PM<sub>2.5</sub> precursor for the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV. For the reasons explained above, the Plan both indicates that there are levels of ammonia control that could have a significant impact on PM<sub>2.5</sub> levels at multiple monitors in the SJV and does not dispose the potential availability of ammonia emission reductions at a level that would have such impacts. Therefore, the EPA proposes to disapprove the State’s ammonia precursor demonstration for the Serious area requirements for purposes of the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV.

#### *B. Best Available Control Measures*

##### **1. Statutory and Regulatory Requirements**

Section 189(b)(1)(B) of the Act requires for any Serious PM<sub>2.5</sub> nonattainment area that the State submit provisions to assure that the best available control measures (BACM), including controls that reflect best available control technology (BACT), for the control of PM<sub>2.5</sub> and PM<sub>2.5</sub> 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<sub>2.5</sub> SIP Requirements Rule to mean “any technologically and economically feasible control measure that can be implemented in whole or in part within 4 years after the date of reclassification of a Moderate PM<sub>2.5</sub> nonattainment area to Serious and that generally can achieve greater permanent and enforceable emissions reductions in direct PM<sub>2.5</sub> emissions and/or emissions of PM<sub>2.5</sub> plan precursors from sources in the area than can be achieved through the implementation of reasonably available control measures (RACM) on the same source(s).”<sup>99</sup>

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.<sup>100</sup> Indeed, because states are required to implement BACM and BACT 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 technologically advanced or more costly level of control.<sup>101</sup> If RACM and RACT level controls of emissions have been insufficient to reach attainment, then the CAA Title I, Part D, subpart 4 provisions for PM<sub>2.5</sub> nonattainment plans contemplate the implementation of more stringent controls, controls on more sources, or other adjustments to the control strategy necessary to attain the NAAQS in the area. Thus, BACM/BACT determinations are to be “generally independent” of attainment for purposes of implementing the PM<sub>2.5</sub> NAAQS.<sup>102</sup>

Consistent with longstanding guidance provided in the General Preamble Addendum, the preamble to the PM<sub>2.5</sub> SIP Requirements Rule discusses the following steps for states to use in identifying and selecting the emission controls needed to meet the BACM/BACT requirements of 40 CFR 51.1010:

1. Develop a comprehensive emission inventory of all sources of PM<sub>2.5</sub> and PM<sub>2.5</sub> precursors from major and non-major stationary point sources, area sources, and mobile sources;
2. Identify potential control measures for all sources or source categories of emissions of PM<sub>2.5</sub> and relevant PM<sub>2.5</sub> plan precursors;
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.<sup>103</sup>

The EPA allows states to consider factors such as a source’s processes and operating procedures, raw materials, physical plant layout, and potential environmental impacts such as increased water pollution, waste disposal, and energy requirements when

<sup>99</sup> 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.

<sup>100</sup> 81 FR 58010, 58081 and General Preamble Addendum, 42011, 42013.

<sup>101</sup> 81 FR 58010, 58081 and General Preamble Addendum, 42009–42010.

<sup>102</sup> PM<sub>2.5</sub> SIP Requirements Rule, 58081–58082. See also, General Preamble Addendum, 42011.

<sup>103</sup> 81 FR 58010, 58083–58085.

<sup>97</sup> PM<sub>2.5</sub> Precursor Guidance, 31.

<sup>98</sup> 2018 PM<sub>2.5</sub> Plan, App. G, tables 4 through 7.

considering technological feasibility.<sup>104</sup> For purposes of evaluating economic feasibility, the EPA allows states to consider 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.<sup>105</sup> For any potential control measure identified through the process described above that is eliminated from consideration, states are required to provide detailed written justification for doing so on the basis of technological or economic feasibility, including how its criteria for determining such feasibility are more stringent than those used for determining RACM/RACT.<sup>106</sup>

Once these analyses are complete, the State must use this information to develop enforceable control measures for all relevant source categories in the nonattainment area and submit them to the EPA for evaluation as SIP provisions to meet the basic requirements of CAA section 110 and any other applicable substantive provisions of the Act.

## 2. BACM for Ammonia Sources

As previously noted, as part of the EPA's 2021 Proposed Rule, we reviewed the State's analysis of ammonia control for the primary source categories of ammonia in the context of our evaluation of the State's precursor demonstration.<sup>107</sup> Because our prior proposal to approve the State's ammonia precursor demonstration would have relieved the State of its obligation to implement BACM for ammonia sources, we did not present a summary of the 2018 PM<sub>2.5</sub> Plan with respect to the BACM requirements for ammonia for the 2012 annual PM<sub>2.5</sub> NAAQS, nor our evaluation thereof. Given our reconsidered proposal to disapprove the State's ammonia precursor demonstration, in the following sections of this proposed rule we evaluate the District's control analysis for the two most substantial source categories of ammonia, which together sum to more than 90% of the emissions in the SJV: CAFs and fertilizer application.

### a. Summary of State's Submission

The District presents its analysis of ammonia controls for the primary ammonia source categories in the SJV in Appendix C, section C.25 ("Ammonia in the San Joaquin Valley") of the 2018 PM<sub>2.5</sub> Plan. The District evaluated its

emission control measures for compliance with BACM for CAFs and described water-related measures applicable to fertilizer application that have co-benefits to air quality. The District presents its reasoning that measures that control VOC emissions, such as Rule 4570 for CAFs, also reduce ammonia emissions due to the physical processes occurring in decomposing manure and subsequent volatilization of decomposition products (like VOC and ammonia). As part of its process for identifying candidate BACM, considering the technical and economic feasibility of additional control measures, the District reviewed the EPA's guidance documents on BACM, and control measures implemented in other nonattainment areas in California and other states.<sup>108</sup>

For CAFs, the District discusses in detail how Rule 4570 ("Confined Animal Facilities") is structured (*e.g.*, to address varying types of CAFs, including applicability thresholds); the five main CAF operations/emission sources: feeding, housing (including distinctions for housing configurations), solid waste, liquid waste, and land application of manure; and the control menu requirements for each of those five operations.<sup>109</sup> The District summarizes the specific requirements applicable to each type of cattle-based CAF, including dairies, beef feedlots, and "other cattle" and describes its basis for ammonia emission reductions estimates, including cited research papers.

The District also compares Rule 4570 to other CAF rules imposed by the South Coast Air Quality Management District (AQMD), Bay Area AQMD, Sacramento Metropolitan AQMD, Imperial County Air Pollution Control District (APCD), and the State of Idaho.<sup>110</sup> The District evaluates a potential additional control measure—application of sodium bisulfate to reduce pH and bacterial levels in bedding for dairy cattle—and concludes that such measure is not feasible based on a number of factors, including health and safety of dairy workers and animals, impacts on water quality, and overall cost and effectiveness.<sup>111</sup>

For fertilizer application, as described in section II.A.3 of this proposed rule, the District states that fertilizer application is the second largest ammonia source in the SJV and that the District does not have statutory

authority to regulate such activities.<sup>112</sup> Notwithstanding, the District describes how regulations adopted by the California Water Resources Control Board, including orders adopted by the Central Valley Regional Water Quality Control Board (*e.g.*, a Nutrient Management Plan), the Irrigated Lands Regulatory Program (*e.g.*, a Nitrogen Management Plan), or other individual mechanisms<sup>113</sup> subject agricultural operators, including dairies, bovine feedlots, poultry operations, and crop farmers to "waste discharge requirements that protect both surface water and groundwater."<sup>114</sup>

Overall, the District concludes that "the Valley's ammonia emissions have been significantly reduced through stringent regulations, that additional ammonia control measures are infeasible, and that Valley sources are already implementing BACM."<sup>115</sup>

### b. Summary of Adverse Comments

Public Justice states that "[w]eaker controls are consistently allowed for agricultural sources," including an "expansive menu of control options" in Rule 4570, that they assert provide little to no emission reduction benefit.<sup>116</sup> More broadly, as described in section II.A.2 of this proposed rule, the commenters assert that "[t]he analysis of potential controls is particular[ly] weak and ignores the wealth of literature demonstrating that strategies for reducing ammonia emissions from agriculture . . . are among the most effective for also reducing PM concentrations," and cite several studies in support of this argument.<sup>117</sup> The commenters further state that reducing ammonia emissions may be achieved through "strategies such as improving livestock feed to reduce excreted nutrients, altering manure storage and handling practices to prevent [ammonia] emissions, and improving synthetic fertilizer use efficiency," again citing numerous studies.<sup>118</sup> The commenters

<sup>112</sup> 2018 PM<sub>2.5</sub> Plan, App. C, C-311.

<sup>113</sup> 2018 PM<sub>2.5</sub> Plan, App. C, C-339 to C-343.

<sup>114</sup> 2018 PM<sub>2.5</sub> Plan, App. C, C-341.

<sup>115</sup> 2018 PM<sub>2.5</sub> Plan, App. C, C-312.

<sup>116</sup> Public Justice Comment Letter, 20.

<sup>117</sup> Public Justice Comment Letter, 16, Exhibits 31 through 34.

<sup>118</sup> Public Justice Comment Letter, 17, Exhibits 35 through 40 and three additional studies: N. Cole, et al., "Influence of dietary crude protein concentration and source on potential ammonia emissions from beef cattle manure," *J. Anim. Sci.* 83, 722, 2005; N. Cole, P. Defoor, M. Galyean, G. Duff, J. Gleghorn, "Effects of phase-feeding of crude protein on performance, carcass characteristics, serum urea nitrogen concentrations, and manure nitrogen of finishing beef steers," *J. Anim. Sci.* 12, 3421-3432, 2006; and R. Todd, N. Cole, R. Clark, "Reducing crude protein in beef cattle diet reduces

<sup>104</sup> 40 CFR 51.1010(a)(3)(i).

<sup>105</sup> 40 CFR 51.1010(a)(3)(ii).

<sup>106</sup> 40 CFR 51.1010(a)(3)(iii).

<sup>107</sup> 86 FR 74310, 74319. See also, 85 FR 17382, 17395 (March 27, 2020), and the EPA's PM<sub>2.5</sub> Precursor TSD, 13.

<sup>108</sup> 2018 PM<sub>2.5</sub> Plan, Chapter 4, section 4.3.1.

<sup>109</sup> 2018 PM<sub>2.5</sub> Plan, App. C, C-312 to C-323.

<sup>110</sup> 2018 PM<sub>2.5</sub> Plan, App. C, C-323 to C-337.

<sup>111</sup> 2018 PM<sub>2.5</sub> Plan, App. C, C-338 to C-339.

argue that the EPA “should reject the plan’s BACM analysis for failing to justify these weaker controls, and for being inconsistent with the Title VI prohibition against policies and practices that inflict disparate impacts.”

### c. The EPA’s Reconsidered Proposal

As a result of our proposed conclusion that ammonia remains a regulated precursor for the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV, the EPA has evaluated potential ammonia emissions control measures for the two most substantial source categories in the SJV and evaluated whether the State has implemented ammonia controls with a BACM/BACT level of stringency. Thus, the EPA has also evaluated the existing control measures that the State claims are BACM for two of the main sources of ammonia in the area, including confined animal facilities (CAFs) and fertilizer application.<sup>119</sup> As discussed below, we conclude that the SJV has not established that it has enforceable requirements in the SIP that meet a BACM level of stringency to reduce ammonia emissions from these two categories. Therefore, we propose to disapprove BACM for ammonia sources in the SJV.

Our basis for proposing to disapprove BACM for ammonia sources flows from the controls analysis we have reviewed and discuss in section II.A.3 of this proposed rule. We agree with the commenters that the analysis of potential controls in the 2018 PM<sub>2.5</sub> Plan was weak in two general areas: (1) incomplete quantification of existing ammonia emission reductions, and (2) lack of consideration of potential ammonia control measures identified in research studies. In that section we describe the Plan’s weaknesses with respect to quantifying emission reductions and rely on that description for purposes of evaluating BACM.

Similarly, in section II.A.3, we discuss additional options for ammonia control that we will not reiterate here. Based on our review of the additional research studies cited by the commenters with respect to CAFs, measures such as those for adjusting the protein content of livestock feed (e.g., reducing the portion of beef cattle finishing diets by 1.5% steam-flaked corn), manure handling and storage

(e.g., washing dairy cow collecting yards after each milking event, covering solid manure stores with sheeting), and land application of slurry (e.g., injection application techniques), it appears that additional measures may be available to evaluate. Absent a thorough and more current evaluation of technological and economic feasibility of potential measures as applied in the SJV, we propose to find that the State has not demonstrated whether or how additional measures (e.g., in the form of existing options that could also be feasibly implemented, or new options that may lead to increased reductions) may have been evaluated, implemented (even partially) by the existing rules, or set aside for reasons of technological feasibility or economic feasibility, consistent with the BACM requirements.

For fertilizer application, as discussed in section II.A.3 of this proposed rule, the District indicates that it does not have authority to regulate ammonia emissions from fertilizer application. Regardless of which State entity, as a matter of State law, has authority over this class of activities, CAA section 189(b)(1) requires that the State include provisions to ensure implementation of BACM for direct PM<sub>2.5</sub> and plan precursor emissions, and CAA section 110(a)(2)(E)(i) requires the State to provide necessary assurances that it has adequate authority to carry out the implementation plan for the area. While the Plan describes certain water-related measures (e.g., Nutrient Management Plans and Nitrogen Management Plan) that subject agricultural operators, including dairies, bovine feedlots, poultry operations, and crop farmers to waste discharge requirements, and likely limit ammonia emissions to the air, to our knowledge, these regulations do not impose any enforceable requirement for ammonia emissions to the air, and thus suffer a similar problem as Rule 4570.<sup>120</sup>

We agree that as a general matter, managing the amount of nitrogen applied to the environment should reduce the potential for pollution to air, water, and land. However, the 2018 PM<sub>2.5</sub> Plan does not quantify or otherwise substantiate the scale and timing of such potential ammonia emission reduction benefits, nor their enforceability. We propose that the State has not adequately identified potential control measures, evaluated for BACM/BACT, nor demonstrated the

implementation of BACM/BACT for controlling ammonia emissions from fertilizer application, the second largest source of such emissions in the SJV.

As a result of our proposal that the State has not demonstrated that BACM/BACT controls are in place for CAFs and fertilizer application, two source categories that make up more than 90% of the ammonia emissions in the SJV, we propose to disapprove the State’s BACM demonstration for ammonia sources.

### 3. BACM for Building Heating Emission Sources

#### a. Summary of 2021 Proposed Rule

In our 2021 Proposed Rule, the EPA summarized the State’s submission in the 2018 PM<sub>2.5</sub> Plan for the SJV and presented our BACM evaluation for emission sources of direct PM<sub>2.5</sub> and NO<sub>x</sub>.<sup>121</sup> We briefly summarize those components here with respect to the State’s BACM demonstration for building heating emission sources, such as water heaters and space heaters (e.g., furnaces), in the SJV.

In Appendix C of the 2018 PM<sub>2.5</sub> Plan, the District identifies the stationary and area sources of direct PM<sub>2.5</sub> and NO<sub>x</sub> in the SJV that are subject to District emission control measures and provides its evaluation of these regulations for compliance with BACM requirements. As part of its process for identifying candidate BACM, the District reviewed the EPA’s guidance documents on BACM, additional guidance documents on control measures for direct PM<sub>2.5</sub> and NO<sub>x</sub> emission sources, and control measures implemented in other ozone and PM<sub>2.5</sub> nonattainment areas in California and other states.<sup>122</sup> Based on these analyses, the District concludes that all best available control measures for stationary and area sources are in place in the SJV for NO<sub>x</sub> and directly emitted PM<sub>2.5</sub> for purposes of meeting the BACM/BACT requirement for the 2012 annual PM<sub>2.5</sub> NAAQS.

With respect to building heating emission sources, the District presents its evaluations of Rule 4902 (“Residential Water Heaters”) and Rule 4905 (“Natural Gas-Fired, Fan-Type Central Furnaces”) in sections C.20 and C.21, respectively, of Appendix C of the 2018 PM<sub>2.5</sub> Plan. Both rules are point of sale rules that limit what kinds of residential water heaters and furnaces may be sold in the SJV. The District describes the types of equipment covered by each rule, compares the specific provisions of each rule that

ammonia emissions from artificial feedyard surfaces,” J. Environ. Qual. 35, 404–411, 2006.

<sup>119</sup> By focusing on these two source categories, the EPA is not indicating that this is an exhaustive list of ammonia source categories that must be evaluated for BACM. However, because these two categories amount to more than 90% of the ammonia emissions in the SJV, we focus our analysis on these two categories.

<sup>120</sup> Unlike Rule 4570, which has been approved into the California SIP to limit VOC emissions, the State’s water-related regulations on fertilizer application have not been submitted for approval into the California SIP.

<sup>121</sup> 86 FR 74310, 74324–74325.

<sup>122</sup> 2018 PM<sub>2.5</sub> Plan, Ch. 4, section 4.3.1.



limit NO<sub>x</sub> emissions<sup>123</sup> to comparable rules in other California air districts, and concludes that each rule represents BACM for their respective source category.

Rule 4902 applies to natural gas-fired, residential water heaters with heat input rates less than or equal to 75,000 British thermal units per hour (Btu/hr). The District tightened the rule's NO<sub>x</sub> limits in 2009; and the EPA approved the rule into the SIP in 2010.<sup>124</sup> The District estimates that, due to Rule 4902, annual average emissions of NO<sub>x</sub> would decrease from 2.15 tpd in 2013 to 1.91 tpd in 2025 (0.24 tpd decrease) and annual average emissions of direct PM<sub>2.5</sub> would increase from 0.21 tpd in 2013 to 0.23 tpd in 2025 (0.02 tpd increase).<sup>125</sup>

In addition to comparing the NO<sub>x</sub> limits in its Rule 4902 to rules in other California air districts, the District also presents a multi-factor comparison of natural gas-fired and propane-fired, water heaters to electric water heaters.<sup>126</sup> The District discussed the likely impacts of requiring electric water heaters, including the advantages such as no NO<sub>x</sub> emissions,<sup>127</sup> less expensive purchase price, and smaller size, and the disadvantages such as higher cost of electricity, and the costs of residence modifications to convert to electric. Based on 2017–2018 data, which is consistent with the timing of Plan adoption in 2018, the District calculated emission reductions and cost effectiveness of the three kinds of water heaters by fuel type and concluded that “[w]hile the lifetime cost of an electric water heater is higher than that of propane and natural gas, the emissions benefits may make converting to electric water heating a viable control strategy.”<sup>128</sup> The analysis does not explore the cost effectiveness of such controls and Rule 4902 does not include any requirements regarding electrification.

Rule 4905 applies to natural gas-fired, fan-type central furnaces with heat input rates less than 175,000 Btu/hr and combination heating and cooling units with a rated cooling capacity of less than 65,000 Btu/hr. In 2015, the District tightened the rule's NO<sub>x</sub> limits for residential units and expanded the rule

to include commercial units and manufactured homes according to a phase-in schedule. The EPA approved the rule into the SIP in 2016.<sup>129</sup> The District estimates that, due to Rule 4905, annual average emissions for NO<sub>x</sub> will decrease from 2.44 tpd in 2013 to 2.13 tpd in 2025 (0.31 tpd decrease) and annual average emissions for direct PM<sub>2.5</sub> will increase from 0.20 tpd in 2013 to 0.22 tpd in 2025 (0.02 tpd increase).<sup>130</sup> Given the need to extend certain compliance deadlines in subsequent amendments to Rule 4905 due to limited supply of certified compliant units,<sup>131</sup> the District states that it had identified no additional emission reduction measures for this source category as of that point in time.<sup>132</sup>

As noted in the EPA's 2021 Proposed Rule, we provided our evaluation of the District's BACM demonstration for stationary and area sources in general, and several source categories in more detail, in three documents: (1) section III of the EPA's "Technical Support Document, EPA Evaluation, San Joaquin Valley Serious Area Plan for the 2012 Annual PM<sub>2.5</sub> NAAQS," December 2021 ("EPA's 2012 Annual PM<sub>2.5</sub> TSD"); (2) the EPA's "Technical Support Document, EPA Evaluation of BACM/MSM, San Joaquin Valley PM<sub>2.5</sub> Plan for the 2006 PM<sub>2.5</sub> NAAQS," February 2020 ("EPA's BACM/MSM TSD"); and (3) the EPA's "Response to Comments Document for the EPA's Final Action on the San Joaquin Valley Serious Area Plan for the 2006 PM<sub>2.5</sub> NAAQS," June 2020 ("EPA's 2020 Response to Comments"). In particular, the EPA's 2020 Response to Comments presented our evaluation of the District's BACM demonstration for residential water heaters and residential and commercial, natural gas-fired, fan-type central furnaces.<sup>133</sup> At that time we found that the requirements for residential fuel combustion covered by Rule 4902 and Rule 4905 represented BACM.<sup>134</sup> In addition, the EPA concluded that setting a zero-NO<sub>x</sub> standard for heating

appliances in new buildings reasonably requires additional consideration and analysis of technological and economic feasibility by the District because, per the 2018 PM<sub>2.5</sub> Plan, the most common types of residential water heaters and furnaces are those that use natural gas as fuel.

We also noted that the building codes referenced by commenters at that time appear to be green building code ordinances that restrict or prohibit installation of natural gas or propane appliances in new construction.<sup>135</sup> Such ordinances, most of which appeared to have been adopted in late 2019 and early 2020, fell within a category known as "reach codes," which are city and county building code standards for energy efficiency that exceed California's State-wide standards. We stated that California law requires local governments to submit proposed ordinances to the California Energy Commission (CEC) for a determination that they will be both cost effective and more energy efficient than statewide standards; compliance with this procedure is necessary for such measures to be enforceable.<sup>136</sup> We also noted that ordinances adopted by city councils and county officials are legally distinct from measures adopted by the governing boards of the respective air districts and that it did not appear at the time that California air districts had adopted similar restrictions.

#### b. Summary of Adverse Comments

Public Justice states that further emission controls are available for building heating via the electrification of furnaces, water heaters, and other gas-fired appliances.<sup>137</sup> The commenters refer to comments submitted by a group of environmental, public health, and community organizations (collectively referred to herein as "NPCA") on the EPA's proposed rule on the 2006 24-hour PM<sub>2.5</sub> NAAQS portion of the SJV PM<sub>2.5</sub> Plan,<sup>138</sup> noting that building electrification requirements to reduce emissions from such sources already

<sup>123</sup> The District notes that equipment subject to Rule 4902 are fired on natural gas that meets California Public Utility Commission standards and, therefore, emit only low amounts of SO<sub>x</sub> and direct PM<sub>2.5</sub>. 2018 PM<sub>2.5</sub> Plan, App. C, C-288.

<sup>124</sup> 75 FR 24408 (May 5, 2010).

<sup>125</sup> 2018 PM<sub>2.5</sub> Plan, App. C, C-283.

<sup>126</sup> 2018 PM<sub>2.5</sub> Plan, App. C, C-288 to C-289.

<sup>127</sup> The EPA notes that while the NO<sub>x</sub> emissions of electric water heaters and furnaces are zero, there could be an increase in NO<sub>x</sub> emissions from electric power plants.

<sup>128</sup> 2018 PM<sub>2.5</sub> Plan, App. C, C-289.

<sup>129</sup> 81 FR 17390 (March 29, 2016).

<sup>130</sup> 2018 PM<sub>2.5</sub> Plan, App. C, C-290.

<sup>131</sup> The District further amended Rule 4902 in 2018, 2020, and 2021 to extend the compliance deadline for specific units due to limited supply of certified compliant units, with each amendment applying to a smaller subset of those specific units. See, e.g., San Joaquin Valley UAPCD, "Item Number 10: Adopt Proposed Amendments to Rule 4905 (Natural Gas-Fired, Fan-Type Central Furnaces)," December 16, 2021, 2–3.

<sup>132</sup> 2018 PM<sub>2.5</sub> Plan, App. C, C-293. Unlike the District's consideration of electric water heaters, the District did not present an evaluation of electric furnaces in its analysis of Rule 4905.

<sup>133</sup> EPA's 2020 Response to Comments, Comment 6.O and Response 6.O, 142–148.

<sup>134</sup> EPA's 2020 Response to Comments, 146–147.

<sup>135</sup> EPA's 2020 Response to Comments, 147–148.

<sup>136</sup> California 2019 Building Energy Standards, at California Code of Regulations (CCR), Title 24, Part 1, Article 1, Sec. 10–106 ("Locally Adopted Energy Standards"); see also <https://ww2.energy.ca.gov/title24/2016standards/ordinances>.

<sup>137</sup> Public Justice Comment Letter, 19.

<sup>138</sup> Comment letter dated and received April 27, 2020, from Mark Rose, NPCA, et al., to Rory Mays, EPA, including Appendices A through G. The seven environmental and community organizations, in order of appearance in the letter, are the National Parks Conservation Association (NPCA), Earthjustice, Central Valley Air Quality Coalition, Coalition for Clean Air, Central Valley Environmental Justice Network, The Climate Center, and Central Valley Asthma Collaborative (collectively "NPCA").

exist in over 30 jurisdictions in California and other states. The commenters state that, since that time, additional jurisdictions have moved forward with gas bans, appliance standards, and other strategies for building heating.<sup>139</sup>

With respect to the EPA's response to the NPCA comments in 2020,<sup>140</sup> Public Justice argues that the "EPA merely asserted that the District had found increased building electrification infeasible," despite the record showing that other jurisdictions required such measures, and assert that the District noted the potential of such measures but rejected them without explanation. The commenters further argue that the EPA did not rebut evidence on the benefits and feasibility of such measures, instead noting the need for further consideration, and that two years later, the Plan does not provide further consideration.

### c. The EPA's Reconsidered Proposal

Based on the adverse comments from Public Justice, the EPA has reconsidered our proposed approval of the State's demonstration of BACM for NO<sub>x</sub> and direct PM<sub>2.5</sub> emissions from building heating appliances, such as residential water heating and residential and commercial space heating. As discussed below, we now propose to disapprove the State's BACM demonstration for such building heating emission sources.

Although the EPA has previously approved the State's BACM demonstration for building heating emission sources in 2020 with respect to the 2006 24-hour PM<sub>2.5</sub> NAAQS portion of the 2018 PM<sub>2.5</sub> Plan, and such approval was upheld by the Ninth Circuit Court of Appeals,<sup>141</sup> several factors have reshaped the facts and circumstances of controlling emissions from such sources as of 2022 and beyond. First, while building ordinances that restrict or prohibit installation of natural gas or propane appliances in new construction were starting to appear in 2019 and 2020, as Public Justice correctly asserts, two additional years have passed and

additional jurisdictions have adopted gas bans, appliance standards, and other strategies for building heating.<sup>142</sup> A recent policy brief published by the UCLA School of Law states that 52 cities and counties in California have adopted building codes to reduce their reliance on gas for building heating appliances, and discusses several examples.<sup>143</sup> The growth in the number and types of local control measures to reduce pollution from building heating by restricting or limiting the use of natural gas-fired heaters support their general availability as technologically feasible measures.

Second, the time horizon of the 2012 annual PM<sub>2.5</sub> NAAQS portion of the SJV PM<sub>2.5</sub> Plan is one year later (2025 attainment date) than that of the 2006 24-hour PM<sub>2.5</sub> NAAQS portion of the Plan (2024 attainment date), affording additional time for potential control measures to achieve emission reductions that may assist attainment of the 2012 annual PM<sub>2.5</sub> NAAQS. Even if full implementation of such new measures is not possible by the applicable attainment date, the State should evaluate whether they could be implemented in part, consistent with the fifth step for BACM/BACT evaluation discussed in the PM<sub>2.5</sub> SIP Requirements Rule and the General Preamble (*i.e.*, to determine the earliest date by which a control measure or technology can be implemented in whole or in part).<sup>144</sup>

Third, some of the underlying bases for the District's cost comparison for residential water heating may have changed since the District's 2018 adoption of the Plan. For example, in comparing emission reductions and cost effectiveness of low-NO<sub>x</sub> natural gas, propane, and electric water heaters, the District used data on energy factors and purchase price from Grainger Industrial Supply as of June 14, 2018, and lifetime energy cost data from the U.S. Energy Information Administration as of 2017. Furthermore, as claimed by Public Justice, the District did not explain its rejection of additional control measures of this type, other than to assert that they were generally more costly. Regarding residential and commercial space heating, CARB and the District did not provide a detailed economic feasibility analysis in the Plan. CARB and the District simply stated that, due

to limited supply of certified compliant natural gas-fired units to comply with Rule 4905, they could identify no additional emission reduction measures. The incomplete cost analyses presented by the District, changes in costs over time, and lack of justification for rejecting measures to reduce pollution from building heating by restricting or limiting the use of natural gas-fired heaters indicate an insufficient economic feasibility analysis.

Fourth, CARB and at least one other air district (Bay Area AQMD) are moving forward in developing measures to set zero-emission standards for space heaters and water heaters. In developing its 2022 State SIP Strategy (for the 2015 ozone NAAQS), CARB has stated that the "fuels we use and burn in buildings, primarily natural gas, for space and water heating contribute significantly to building-related criteria pollutant and GHG emissions and provide an opportunity for substantial emissions reductions where zero-emission technology is available."<sup>145</sup> Accordingly, CARB is developing zero-emission standard concepts and, given the intersection of air quality needs and other areas of building and energy regulation, and identifying other regulatory entities that they plan to engage, including the U.S. Department of Energy, CEC, and the California Building Standards Commission, Department of Housing and Community Development. We note, however, that the proposed 2022 State SIP Strategy released August 12, 2022, anticipates implementation starting in 2030, pending rule development and CARB Board hearing in 2025.<sup>146</sup>

The Bay Area AQMD hosted public meetings in 2021 and developed draft amendments to certain rules that would reduce NO<sub>x</sub> emissions from residential and commercial furnaces and water heaters.<sup>147</sup> Specifically, Bay Area AQMD has developed draft amendments to two rules: (1) Regulation 9, Rule 4 ("Nitrogen Oxides from Fan Type Residential Central Furnaces"), which applies to furnaces with a heat input rate of less than 175,000 Btu/hr and combination heating and cooling units with a rated cooling capacity of less than 65,000 Btu/hr (like SJVUAPCD Rule 4905); and (2) Regulation 9, Rule 6 ("Nitrogen Oxides Emissions from

<sup>139</sup> Public Justice Comment Letter, 19, and Exhibits 41 through 44. Commenters also state that studies suggest these measures may provide particularly notable benefits to winter PM<sub>2.5</sub> peaks in the SJV. *Id.* at 19.

<sup>140</sup> EPA, "Response to Comments Document for the EPA's Final Action on the San Joaquin Valley Serious Area Plan for the 2006 PM<sub>2.5</sub> NAAQS," June 2020. See Comment 6.O and Response 6.O on pages 142–147.

<sup>141</sup> Ninth Circuit Memorandum Order, 9. Regarding increased building electrification requirements, the Court stated that "the EPA considered such an approach and reasonably accepted the State's determination that it was not feasible at this time."

<sup>142</sup> See Public Justice Comment Letter, Exhibits 41 through 44.

<sup>143</sup> Heather Dadashi, Cara Horowitz, and Julia Stein, "Pritzker Environmental Law and Policy Briefs, How Air Districts Can End NO<sub>x</sub> Pollution From Household Appliances," Emmett Institute on Climate Change and the Environment, UCLA School of Law, March 2022, 8.

<sup>144</sup> 81 FR 58010, 58083–58085.

<sup>145</sup> CARB, "Draft 2022 State Strategy for the State Implementation Plan," January 31, 2022, 86–88.

<sup>146</sup> CARB, "Proposed 2022 State Strategy for the State Implementation Plan," August 12, 2022, 101–103.

<sup>147</sup> A summary of the Bay Area AQMD's rule development is available at: <https://www.baaqmd.gov/rules-and-compliance/rule-development/building-appliances>.

Natural Gas-Fired Boilers and Water Heaters”), which applies to water heaters with a rated heat input capacity of 75,000 Btu/hr or less (like SJVUAPCD Rule 4902), as well as additional source types and sizes.<sup>148</sup>

For Rule 4, Bay Area AQMD staff have developed draft amendments to lower the current NO<sub>x</sub> emission limit for applicable furnaces from 40 nanograms of NO<sub>x</sub> per joule of useful heat (ng/j) to 14 ng/j (which would match the limit in SJVUAPCD Rule 4905) in the short term (with a compliance date of January 1, 2023); followed by a zero-NO<sub>x</sub> emission requirement (with a compliance date of January 1, 2029); and expand the applicability beyond fan-type central furnaces to other types of equipment (e.g., wall furnaces and direct vent units).<sup>149</sup> For Rule 6, which contains NO<sub>x</sub> limits for small boilers and water heaters, Bay Area AQMD staff proposes a zero-NO<sub>x</sub> emission requirement. However, staff also note that while technologies achieving zero-NO<sub>x</sub> emissions exist, “they are limited in availability and can be expensive,” that such standards would be “technology and market-forcing,” and, therefore, staff proposes compliance dates of January 1, 2027, and January 1, 2031, depending on equipment heat rate (i.e., the size of the boiler or water heater).<sup>150</sup>

CARB and Bay Area AQMD efforts in this area underscore the importance of building heating emission sources, such as water heaters and space heaters (e.g., furnaces), throughout California and the continued effort to implement available control measures for these sources for criteria pollutant attainment planning requirements. At the same time, while SJVUAPCD, CARB, and Bay Area AQMD each acknowledge that zero-NO<sub>x</sub> emission technology for small residential and commercial space and water heating is available, it is unclear what a feasible implementation horizon might be in light of CARB’s strategy and the Bay Area AQMD’s draft amendments. The plan as submitted did not address how such implementation considerations may or may not affect the feasibility of setting such zero-NO<sub>x</sub> emission standards for space and water heating in small residential and commercial buildings in the SJV.

<sup>148</sup> As in the San Joaquin Valley, larger boilers and similar equipment used in industrial, institutional, and large commercial settings are subject to other rules of the Bay Area AQMD, and therefore not subject to Rule 4 or Rule 6.

<sup>149</sup> Bay Area AQMD, “Workshop Report, Draft Amendments to Building Appliance Rules—Regulation 9, Rule 4: Nitrogen Oxides from Fan Type Residential Central Furnaces and Rule 6: Nitrogen Oxide Emissions from Natural Gas-Fired Boilers and Water Heaters,” September 2021, 1.

<sup>150</sup> Id.

Given the factors discussed above, we now propose that the State has not adequately identified potential control measures, evaluated for BACM/BACT, nor demonstrated the implementation of BACM/BACT for controlling NO<sub>x</sub> and direct PM<sub>2.5</sub> emissions from building emission heating sources in the SJV.

### C. Attainment Demonstration

#### 1. Summary of 2021 Proposed Rule

In sections IV.C (air quality modeling) and IV.F (attainment demonstration) of our 2021 Proposed Rule, the EPA summarized the CAA and regulatory requirements for air quality modeling and attainment demonstrations, the State’s submission in the SJV PM<sub>2.5</sub> Plan, and our evaluation thereof.<sup>151</sup> We briefly summarize those components herein.

Sections 188(c)(2) and 189(b)(1)(A) of the CAA require that Serious area plans must include a demonstration (including air quality modeling) that provides for attainment of the PM<sub>2.5</sub> NAAQS as expeditiously as practicable, but no later than the end of the tenth calendar year after the area’s designation as nonattainment. The PM<sub>2.5</sub> SIP Requirements Rule also specifies that the control strategy in a Serious area attainment plan must provide for attainment as expeditiously as practicable.<sup>152</sup> The outermost statutory Serious area attainment date for the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV is December 31, 2025 (absent an EPA-approved attainment date extension request under CAA section 188(e)). 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 emissions controls (including any controls that were previously determined to be RACM/RACT or BACM/BACT), any other emissions controls required to meet BACM/BACT, and additional measures as needed for expeditious attainment of the NAAQS. The regulatory requirements for Serious area plans are codified at 40 CFR 51.1010 (control strategy requirements) and 40 CFR 51.1011(b) (attainment demonstration and modeling requirements). We also described the EPA’s PM<sub>2.5</sub> modeling guidance (“Modeling Guidance”),<sup>153</sup> including

<sup>151</sup> 86 FR 74310, 74322–74324 (air quality modeling) and 74325–74338 (attainment demonstration).

<sup>152</sup> 40 CFR 51.1011(b)(1); 81 FR 58010, 58087.

<sup>153</sup> Memorandum dated November 29, 2018, from Richard Wayland, Air Quality Assessment Division, OAQPS, EPA, to Regional Air Division Directors, EPA, Subject: “Modeling Guidance for

our recommendations therein for photochemical modeling, inputs, procedures, performance evaluation, emissions simulation, and calculating relative response factors (RRFs).

With respect to air quality modeling, the 2018 PM<sub>2.5</sub> Plan included the State’s modeled attainment demonstration projecting that the SJV will attain the 2012 annual PM<sub>2.5</sub> NAAQS by December 31, 2025; the State’s primary discussion of the photochemical modeling appears in Appendix K (“Modeling Attainment Demonstration”). The State provides a conceptual model of PM<sub>2.5</sub> formation in the SJV as part of the modeling protocol in Appendix L (“Modeling Protocol”) and describes emission input preparation procedures. The State presents additional relevant information in Appendix C (“Weight of Evidence Analysis”) of CARB’s staff report for the 2018 PM<sub>2.5</sub> Plan,<sup>154</sup> which includes ambient trends and other data in support of the demonstration of attainment by 2025.

In the 2021 Proposed Rule, the EPA presented its review of the State’s modeling approach and its many interconnected facets, including model input preparation, model performance evaluation, use of the model output for the numerical NAAQS attainment test, and modeling documentation, and found it to be generally consistent with the EPA’s recommendations in the Modeling Guidance. We incorporated our evaluation of the Plan’s modeling for the 2006 24-hour PM<sub>2.5</sub> NAAQS portion of the SJV PM<sub>2.5</sub> Plan<sup>155</sup> and extended that evaluation with information specific to the 2012 annual PM<sub>2.5</sub> NAAQS. Overall, in the 2021 Proposed Rule, we considered the State’s analyses consistent with the EPA’s guidance on modeling for PM<sub>2.5</sub> attainment planning purposes and proposed to find that the modeling in the 2018 PM<sub>2.5</sub> Plan was adequate for the purposes of supporting the State’s RFP demonstration and the attainment demonstration.

With respect to the attainment demonstration, the SJV PM<sub>2.5</sub> Plan includes a modeled demonstration projecting attainment of the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV by December 31, 2025, based on emission reductions

Demonstrating Air Quality Goals for Ozone, PM<sub>2.5</sub>, and Regional Haze,” (“Modeling Guidance”).

<sup>154</sup> CARB, “Staff Report, Review of the San Joaquin Valley 2018 Plan for the 1997, 2006, and 2012 PM<sub>2.5</sub> Standards,” release date December 21, 2018 (“CARB Staff Report”).

<sup>155</sup> EPA Region IX, “Technical Support Document, EPA Evaluation of Air Quality Modeling, San Joaquin Valley PM<sub>2.5</sub> Plan for the 2006 PM<sub>2.5</sub> NAAQS,” February 2020 (“EPA’s 2006 NAAQS Modeling TSD”).

from implementation of baseline control measures and the development, adoption, and implementation of additional control measures to meet specific enforceable commitments. In the EPA's 2021 Proposed Rule, we described how the Plan's control strategy was to reduce emissions from sources of NO<sub>x</sub> and direct PM<sub>2.5</sub> and that most of the projected emission reductions are achieved by baseline measures—*i.e.*, the combination of State and District measures adopted prior to the State's and District's adoption of the Plan—that will achieve ongoing emission reductions from the 2013 base year to the 2025 projected attainment year.

The remainder of the Plan's emission reductions are to be achieved by additional measures to meet enforceable commitments, including potential regulatory and incentive-based measures and, as necessary, substitute measures.<sup>156</sup> In the Valley State SIP Strategy and the 2018 PM<sub>2.5</sub> Plan, CARB and the District, respectively, included commitments to take action on specific measures by specific years or to develop substitute measures (referred to as “control measure commitments”) and to achieve specified amounts of NO<sub>x</sub> and direct PM<sub>2.5</sub> emission reductions by certain dates (referred to as “aggregate tonnage commitments”).<sup>157</sup> We refer to these complementary commitments herein as “aggregate commitments.”

In the 2021 Proposed Rule, the EPA described several findings relating to our evaluation of the SJV PM<sub>2.5</sub> Plan's attainment demonstration. First, we proposed to approve the Plan's emissions inventories and to find the Plan's air quality modeling adequate.<sup>158</sup> Second, we proposed to find that the Plan provides for expeditious attainment through the timely implementation of the control strategy to reduce emissions from sources of NO<sub>x</sub> and direct PM<sub>2.5</sub>, including RACM, BACM, and any other emission controls necessary for expeditious attainment.

<sup>156</sup> In this proposed rule, the term “substitute measures” means additional control measures that were not identified in CARB and the District's original control measure commitments in adopting the Valley State SIP Strategy and the 2018 PM<sub>2.5</sub> Plan, respectively. The “substitute” aspect primarily relates to emission reductions (*i.e.*, providing emission reductions where any adopted measure achieves less emission reductions than originally estimated, and/or providing emission reductions in lieu of any originally planned measure that is not adopted). They are also sometimes referred to as “alternative measures” in the SJV PM<sub>2.5</sub> Plan and adopting resolutions.

<sup>157</sup> CARB Resolution 18–49 and SJVUAPCD Governing Board Resolution 18–11–16, paragraph 6.

<sup>158</sup> Sections IV.A (emissions inventory) and IV.C (air quality modeling) of the 2021 Proposed Rule.

Third, the EPA proposed to find that the emissions reductions that are relied on for attainment in the SIP submission are creditable. We noted that the SJV PM<sub>2.5</sub> Plan relies principally on already adopted and approved rules to achieve the emissions reductions needed to attain the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV by December 31, 2025, and that the balance of the reductions that the State has modeled to achieve attainment by this date is currently represented by enforceable commitments that account for 13.8% of the NO<sub>x</sub> and 8.0% of the direct PM<sub>2.5</sub> emissions reductions needed for attainment. In terms of our evaluation of CARB and the District's enforceable commitments, we proposed to find that circumstances in the SJV for the 2012 annual PM<sub>2.5</sub> NAAQS warrant the consideration of enforceable commitments and that the EPA's three criteria for such commitments had been met: (1) the commitments constitute a limited portion of the required emissions reductions; (2) both CARB and the District have demonstrated their capability to meet their commitments; and (3) the commitments are for an appropriate timeframe. We therefore proposed to approve the State's reliance on these enforceable commitments in its attainment demonstration.

Overall, in the 2021 Proposed Rule, we proposed to approve the SJV PM<sub>2.5</sub> Plan's demonstration of attainment of the 2012 annual PM<sub>2.5</sub> NAAQS by December 31, 2025, consistent with the requirements of CAA section 189(b)(1)(A). We presented the basis for our proposed determination in sections IV.F.3.a through IV.F.3.e of the 2021 Proposed Rule and provided further detail of our evaluation of baseline measures and the additional measures and aggregate commitments in sections II and IV, respectively, of the EPA's 2012 Annual PM<sub>2.5</sub> TSD.

## 2. Summary of Ninth Circuit Order and Adverse Comments

As introduced in section I.D of this proposed rule, in response to a petition for review of the EPA's approval of the 2006 24-hour PM<sub>2.5</sub> NAAQS portion of the SJV PM<sub>2.5</sub> Plan, the Ninth Circuit Court of Appeals issued a Memorandum Opinion that, in part, vacated the final action with respect to the EPA's second factor for evaluating the validity of the State's enforceable commitments (*i.e.*, whether the State is capable of fulfilling its commitment). The Ninth Circuit's order is very relevant to this proposed rule because the State relied on the same common control strategy, including the same set of enforceable commitments (*i.e.*, the same set of control measure commitments and

aggregate tonnage commitments) for both the 2006 24-hour PM<sub>2.5</sub> NAAQS Serious area plan and the 2012 annual PM<sub>2.5</sub> NAAQS Serious area plan.

The Ninth Circuit found that the EPA “fail[ed] to provide evidence or a reasoned explanation for its conclusion that California will be able to fulfill its commitment” in the face of a potential multi-billion dollar funding shortfall for incentive-based control measure commitments, “which could result in emission reduction shortfalls of approximately 7% of the total NO<sub>x</sub> reductions and 8% of the total PM<sub>2.5</sub> reductions necessary for attainment.”<sup>159</sup> In response to the EPA's arguments that: (1) the funding shortfall may be smaller than projected; (2) emission reductions may be less expensive than the strategy predicts; (3) certain yet-to-be-quantified sources of reductions in the Plan may make up for shortfalls; and (4) California and the District may identify other measures to fulfill their commitments, the Court wrote that, “[b]ecause these speculative assertions are unsupported by the evidence, they fail to ensure that California and the District have a plausible strategy for achieving this portion of the attainment strategy, and therefore do not collectively satisfy the second factor of the EPA's three-factor test.”<sup>160</sup> It is important to emphasize that the State relied heavily on the projected emission reductions that it hopes to achieve through new control measures and emissions reductions reflected in the aggregate commitments. These reductions are crucial to the State meeting the modeled attainment demonstration and RFP requirements. If it is not credible that the State can meet the commitments, then the EPA cannot approve other nonattainment plan elements that rely upon them.

Separately, in comments on the EPA's 2021 Proposed Rule, Public Justice states that CARB and the District's aggregate tonnage commitments are to “achieve a specific amount of reductions at the last possible moment prior to the attainment deadline with no concrete strategies for how that will be achieved.”<sup>161</sup> They assert that prior plans with aggregate tonnage commitments for the 1997 annual PM<sub>2.5</sub> NAAQS by 2015 (*i.e.*, the 2008 PM<sub>2.5</sub> Plan) and then by 2020 (*i.e.*, the SJV PM<sub>2.5</sub> Plan) failed to attain those standards and that such past failures implies that the commitments failed to

<sup>159</sup> *Medical Advocates for Healthy Air v. EPA*, Case No. 20–72780, Dkt. #58–1 (9th Cir., April 13, 2022), 6.

<sup>160</sup> *Id.* at 7.

<sup>161</sup> Public Justice Comment Letter, 20.

deliver the promised clean air.<sup>162</sup> The commenters further state that “deferred, unspecified, and last-minute promises to achieve reductions (*i.e.*, aggregate commitments), inflicts disparate impacts in violation of Title VI,” irrespective of whether the commitments comply with the CAA.

### 3. The EPA’s Reconsidered Proposal

As a result of the Ninth Circuit Memorandum Opinion with respect to the SJV PM<sub>2.5</sub> Plan’s enforceable commitments, the EPA has reconsidered its proposed approval of the Plan’s demonstration of attainment for the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV by December 31, 2025, and now proposes to disapprove the Plan’s attainment demonstration. The Ninth Circuit Memorandum Opinion raised concerns about the ability of CARB and the District to fulfill the commitments.

We present our reconsideration in the following sections of this proposed rule: (1) our reconsideration of CARB and the District’s enforceable commitments and proposal that the commitments do not meet the second factor of the EPA’s three-factor test (in section II.C.3.a); and (2) the effect of our proposed disapproval of the State’s enforceable commitments and specific portions of the State’s BACM demonstration on the modeled attainment demonstration (in section II.C.3.b).

#### a. Additional Measures and Enforceable Commitments

In this subsection we re-examine CARB and the District’s enforceable commitments. We describe CARB and the District’s progress in adopting specific measures that they committed to present for governing board adoption, and evaluate whether CARB and the District have demonstrated the capability to achieve specific tonnages of reductions that they committed to achieve by the 2025 attainment year. We first enumerate the measures that have already been approved into the SIP and quantify the amount of the tonnage commitment that these account for. We then calculate CARB and the District’s remaining commitments as of the time of this notice, describe the strategy that CARB and the District have provided for achieving the remaining reductions (consisting of submitted measures that have not yet been approved into the SIP, adopted measures that have not yet been submitted to the EPA, measures under

development, and other potential future measures), and calculate the reductions that may be associated with these measures. We conclude that although CARB and the District have made substantial progress toward achieving the committed-to reductions, CARB and the District have not presented a plausible strategy demonstrating that they are capable of achieving the *entirety* of the aggregate commitment.

In our 2021 Proposed Rule, the EPA described the SJV PM<sub>2.5</sub> Plan’s series of CARB and District commitments to achieve emission reductions through additional control measures, beyond baseline measures, that are intended to contribute to expeditious attainment of the 2012 annual PM<sub>2.5</sub> NAAQS. For mobile sources, CARB identified a list of 12 State regulatory measures and 3 incentive-based measures that CARB has committed to propose to its Board for consideration by specific years.<sup>163</sup> For stationary sources, the District identified a list of nine regulatory measures and three incentive-based measures that the District has committed to propose to its Board for consideration by specific years.<sup>164</sup>

The Plan contains CARB’s and the District’s estimates of the emission reductions that could be achieved by each of these additional measures, if adopted as planned.<sup>165</sup> As we described in our 2021 Proposed Rule, CARB’s commitments are contained in CARB Resolution 18–49 (October 25, 2018) and the Valley State SIP Strategy and consist of two parts: a control measure commitment and a tonnage commitment.

First, CARB has committed to “begin the measure’s public process and bring to the Board for consideration the list of proposed SIP measures outlined in the *Valley State SIP Strategy* and included

in Attachment A, according to the schedule set forth.”<sup>166</sup> By email dated November 12, 2019, CARB confirmed that it intended to begin the public process on each measure by discussing the proposed regulation or program at a public meeting (workshop, working group, or Board hearing) or in a publicly-released document, and to then propose the regulation or program to its Board.<sup>167</sup> Second, CARB has committed “to achieve the aggregate emissions reductions outlined in the Valley State SIP Strategy of 32 tpd of NO<sub>x</sub> and 0.9 tpd of PM<sub>2.5</sub> emissions reductions in the San Joaquin Valley by 2024 and 2025.”<sup>168</sup> The Valley State SIP Strategy explains that CARB’s overall commitment is to “achieve the total emission reductions necessary to attain the Federal air quality standards, reflecting the combined reductions from the existing control strategy and new measures” and that “if a particular measure does not get its expected emissions reductions, the State is still committed to achieving the total aggregate emission reductions.”<sup>169</sup>

Similarly, in our 2021 Proposed Rule, we explained that the District’s commitments are contained in SJVUAPCD Governing Board Resolution 18–11–16 (November 15, 2018) and Chapter 4 of the 2018 PM<sub>2.5</sub> Plan and also consist of two parts: a control measure commitment and a tonnage commitment. First, the District has committed to “take action on the rules and measures committed to in Chapter 4 of the Plan by the dates specified therein, and to submit these rules and measures, as appropriate, to CARB within 30 days of adoption for transmittal to EPA as a revision to the [SIP].”<sup>170</sup> By email dated November 12, 2019, the District confirmed that it intended to take action on the listed rules and measures by beginning the public process on each measure, *i.e.*, discussing the proposed regulation or program at a public meeting, including a workshop, working group, or Board hearing, or in a publicly-released document, and then proposing the rule or measure to the SJVUAPCD Governing Board.<sup>171</sup> Second, the District has

<sup>162</sup> Public Justice refers specifically to the EPA’s November 2016 finding of failure to attain and the EPA’s November 2021 final disapproval of the 1997 annual PM<sub>2.5</sub> NAAQS portion of the SJV PM<sub>2.5</sub> Plan. 81 FR 84481 (November 23, 2016) and 86 FR 67329 (November 26, 2021), respectively.

<sup>163</sup> CARB Resolution 18–49, Attachment A and Valley State SIP Strategy, Table 7 (“State Measures and Schedule for the San Joaquin Valley”). The schedule of proposed SIP measures in Table 7 includes two additional CARB measures: the second phase of the Advanced Clean Cars Program (“ACC 2”) and the “Cleaner In-Use Agricultural Equipment” measures. However, these measures are not scheduled for implementation until 2026 and 2030, respectively, which is after the January 1, 2025 implementation deadline under 40 CFR 51.1011(b)(5) for control measures necessary for attainment by December 31, 2025. Therefore, we are not reviewing these measures as part of the control strategy to attain the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV.

<sup>164</sup> SJVUAPCD Governing Board Resolution 18–11–16 and 2018 PM<sub>2.5</sub> Plan, Table 4–4 (“Proposed Regulatory Measures”) and Table 4–5 (“Proposed Incentive-Based Measures”).

<sup>165</sup> 2018 PM<sub>2.5</sub> Plan, Ch. 4, Table 4–3 (“Emission Reductions from District Measures”) and Table 4–9 (“San Joaquin Valley Expected Emission Reductions from State Measures”) and Valley State SIP Strategy, Table 8 (“San Joaquin Valley Expected Emission Reductions from State Measures”).

<sup>166</sup> CARB Resolution 18–49, 5.

<sup>167</sup> Email dated November 12, 2019, from Sylvia Vanderspek, CARB, to Anita Lee, EPA Region IX, “RE: SJV PM<sub>2.5</sub> information” (attaching “Valley State SIP Strategy Progress”) and CARB Staff Report, 14.

<sup>168</sup> CARB Resolution 18–49, 5.

<sup>169</sup> Valley State SIP Strategy, 7.

<sup>170</sup> SJVUAPCD Governing Board Resolution 18–11–16, 10–11.

<sup>171</sup> Email dated November 12, 2019, from Jon Klassen, SJVUAPCD, to Wienke Tax, EPA Region IX, “RE: follow up on aggregate commitments in SJV PM<sub>2.5</sub> Plan” (attaching “District Progress in

committed to “achieve the aggregate emissions reductions of 1.88 tpd of NO<sub>x</sub> and 1.3 tpd of PM<sub>2.5</sub> by 2024/2025” through adoption and implementation of these measures or, if the total emission reductions from these rules or measures are less than these amounts, “to adopt, submit, and implement substitute rules and measures that achieve equivalent reductions in emissions of direct PM<sub>2.5</sub> or PM<sub>2.5</sub> precursors” in the same implementation timeframes.<sup>172</sup>

In sections IV.F.3.c and IV.F.3.d of our 2021 Proposed Rule, the EPA described CARB’s and the District’s progress as of that point in time on their control measure commitments and progress towards fulfilling their respective aggregate commitments, respectively. Based on our reconsideration of the State’s enforceable commitments in light of the Ninth Circuit Memorandum Opinion, while we propose to retain certain findings with respect to the State’s progress, we now propose that the State has not adequately demonstrated that it can fulfill the remaining portions of its enforceable commitments (*i.e.*, the second factor of the EPA’s three-factor test). We present our reconsidered evaluation of the status of CARB’s and the District’s control strategy and our three-factor test for enforceable commitments, as follows.

With respect to progress on the control measure commitments, CARB and the District together have adopted 18 measures of the 27 control measure commitments in the SJV PM<sub>2.5</sub> Plan and have begun the public process on 5 of the remaining control measure commitments, which is unchanged since the time of our 2021 Proposed Rule. This progress is described in further detail in CARB and the District’s “Progress Report and Technical Submittal for the 2012 PM<sub>2.5</sub> Standard San Joaquin Valley” (2021 Progress Report).<sup>173</sup> For CARB’s portion, CARB has adopted 10 of the 15 measures identified in its commitment (including one incentive-based measure) and begun the public process on 3 of the remaining 5 measures. For the District’s portion of the control measure commitments, the

District has adopted 8 of the 12 measures identified in its commitment (including one incentive-based measure) and begun the public process on 2 of the remaining 4 measures.

Although CARB and the District have made substantial progress in developing and adopting the regulatory measures listed in their respective control measure commitments, they have not yet fulfilled the commitments for several measures in accordance with the timeframes established in the SJV PM<sub>2.5</sub> Plan. We provide further detail on CARB and the District’s control measure commitments in section IV.A of the EPA’s 2012 Annual PM<sub>2.5</sub> TSD (including tables IV–A and IV–B regarding CARB and the District’s control measure commitments, respectively).<sup>174</sup>

Regarding the remaining nine measures not yet proposed for board consideration, we continue to note that one measure, Rule 4550 (“Conservation Management Practices”), has an action year of 2022 in the 2018 PM<sub>2.5</sub> Plan (*i.e.*, the District has the remainder of 2022 to present a proposed measure for board consideration) and that four regulatory measures and four incentive-based measures are overdue. For the four regulatory measures, while CARB and the District have not proposed these measures to their respective boards, they began the public process on each of the four measures on time with respect to the schedule of their respective public process commitments. To our knowledge, CARB anticipates board consideration of the diesel fuel measures in 2022 and the forklift measure in 2022 or 2023<sup>175</sup> and continues to develop the airport ground support equipment measure; the District continues to evaluate potential amendments to Rule 4692 in the near future.<sup>176</sup>

For the four incentive-based measures, CARB and the District continue to invest in reducing emissions

from heavy-duty trucks and buses, off-road equipment, agricultural operation internal combustion engines, and commercial under-fired charbroiling.<sup>177</sup> However, while CARB and the District have discussed the proposed programs at board hearings,<sup>178</sup> to our knowledge, CARB and the District have not started the public process for the four incentive-based control measure commitments as enforceable measures to be submitted to the EPA for approval and inclusion as control measures in the California SIP. Furthermore, as discussed in section IV.F.3.c of our 2021 Proposed Rule, for heavy-duty trucks and off-road equipment, CARB acknowledges that many of the project lives do not span the attainment year<sup>179</sup> and, thus, while these projects may accelerate emission reductions and benefit communities in the SJV, the projects that qualify for SIP credit may be limited for the purposes of the 2012 annual PM<sub>2.5</sub> NAAQS Serious area attainment demonstration.

Overall, while CARB and the District have made substantial progress in developing and adopting the regulatory measures listed in their respective control measure commitments that were submitted in the SJV PM<sub>2.5</sub> Plan, in light of the Ninth Circuit Memorandum Opinion, we have reconsidered the effect of the eight overdue measures of the original commitments and in particular the overdue incentive-based measures, on our evaluation of CARB and the District’s aggregate tonnage commitments and our three-factor test. Under the second factor of the EPA’s test for enforceable commitments, the

<sup>177</sup> CARB, “Long-Term Heavy-Duty Investment Strategy, Including Fiscal Year 2020–21 Three-Year Recommendations for Low Carbon Transportation Investments,” (App. D to CARB’s “Proposed Fiscal Year 2021–22 Funding Plan for Clean Transportation Incentives”), release date October 8, 2021; and SJVUAPCD, “Comprehensive Annual Financial Report, Fiscal Year Ended June 30, 2020,” release date December 23, 2020. See also, 2021 Progress Report, 3 and 15.

<sup>178</sup> For example, CARB staff discussed the Accelerated Turnover of Trucks and Buses Incentive Measure at its annual 2020 update to the CARB Board. CARB presentation, “Update on the 2018 PM<sub>2.5</sub> SIP for the San Joaquin Valley,” October 22, 2020. District staff discussed and adopted an emission reductions strategy for commercial under-fired charbroiling, including incentives, in December 2020. SJVUAPCD, “Item Number 11: Adopt Proposed Commercial Under-Fired Charbroiling Emission Reduction Strategy,” December 17, 2020.

<sup>179</sup> *Id.* at 24 and 32. Generally, mobile source incentive projects implemented under the Carl Moyer program are under contract only during the “project life” and may not be credited with SIP emission reductions after the project life ends. EPA Region IX, “Technical Support Document for EPA’s Rulemaking for the California State Implementation Plan California Air Resources Board Resolution 19–26 San Joaquin Valley Agricultural Equipment Incentive Measure,” February 2020, 12–13.

Implementing Commitments with 2018 PM<sub>2.5</sub> Plan”).

<sup>172</sup> SJVUAPCD Governing Board Resolution 18–11–16, 10–11.

<sup>173</sup> “Progress Report and Technical Submittal for the 2012 PM<sub>2.5</sub> Standard San Joaquin Valley,” October 19, 2021. Transmitted to the EPA by letter dated October 20, 2021, from Richard W. Corey, Executive Officer, CARB, to Deborah Jordan, Acting Regional Administrator, EPA Region IX. See sections of 2021 Progress Report entitled “Progress in Implementing District Measures” and “Progress in Implementing CARB Measures.”

<sup>174</sup> We note that Table IV–A of the EPA’s 2012 Annual PM<sub>2.5</sub> TSD contained an error with respect to the adoption date of CARB’s measure for Transportation Refrigeration Units Used for Cold Storage. While CARB had heard proposed amendments to the measure on September 23, 2021, the measure was not actually adopted until February 24, 2022, following further process and rule adjustments required by the Board. CARB Resolution 22–5, February 24, 2022.

<sup>175</sup> In the 2021 Progress Report (dated October 19, 2021), page 20, CARB indicates that the Zero-Emission Off-Road Forklift Regulation Phase 1 would be presented for Board consideration “as early as 2022,” while CARB’s updated “SJV PM<sub>2.5</sub> SIP Measure Tracking” (dated December 2021) anticipates presenting the measure to the Board in Summer 2023.

<sup>176</sup> 2021 Progress Report, 8–9, 20–22, and tables 2 and 3.

Agency must evaluate whether a State is capable of fulfilling such commitments. The tardiness of presenting these control measures for board consideration renders the reductions from these measures more speculative under the second factor.

With respect to the aggregate tonnage commitments to attain the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV, we reiterate that CARB committed to achieve 32 tpd of NO<sub>x</sub> and 0.9 tpd of PM<sub>2.5</sub> emissions reductions, and the District committed to achieve 1.88 tpd of NO<sub>x</sub> and 1.3 tpd of PM<sub>2.5</sub> emissions reductions by 2025. These aggregate tonnage commitments sum to 33.88 tpd NO<sub>x</sub> and 2.2 tpd direct PM<sub>2.5</sub>. CARB and the District have committed to achieve these reductions via the 27 control measure commitments, or such other substitute measures as may be necessary, to achieve the aggregate tonnage commitments for NO<sub>x</sub> and direct PM<sub>2.5</sub>.

For the purpose of our analysis of the State's progress toward achieving its aggregate tonnage commitments, of the 18 measures adopted by December 2021, as well as the adoption of an important substitute measure (the Agricultural Burning Phase-out Measure<sup>180</sup>), the State has submitted 12 measures as revisions to the California SIP (*i.e.*, more than the 9 measures submitted to EPA as of the time of the 2021 Proposed Rule). Since December 2021, the EPA finalized or proposed approval of three control measure SIP submissions that were control measure commitments in the SJV PM<sub>2.5</sub> Plan.

First, the EPA finalized approval of the Heavy-Duty Vehicle Inspection Program (HDVIP) and Periodic Smoke Inspection Program (PSIP).<sup>181</sup> However,

as in our 2021 Proposed Rule, CARB has not yet provided its analysis of the basis for this emission reduction estimate (of 0.02 tpd direct PM<sub>2.5</sub>, per the State's 2021 Progress Report). Therefore, the EPA is not proposing at this time to credit this measure with any particular amount of emission reductions towards attainment of the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV.

Second, the EPA finalized approval of the Agricultural Burning Phase-out Measure,<sup>182</sup> which includes a schedule to phase-out (*i.e.*, introduce prohibitions of) agricultural burning for additional crop categories or materials accounting for a vast majority of the tonnage of agricultural waste in phases that started January 1, 2022, and become fully implemented by January 1, 2025.<sup>183</sup> The EPA received comments from the District that supported approval of the Agricultural Burning Phase-out Measure into the SIP while also advocating for a higher rule effectiveness rate (*i.e.*, 95% instead of EPA's proposed 80%),<sup>184</sup> which in turn would increase the amount of emission reductions that the EPA would credit towards fulfilling the District's aggregate tonnage commitment. We continue to evaluate these comments and for now have retained our proposal to credit the measure for emission reductions of 0.83 tpd NO<sub>x</sub> and 1.23 tpd direct PM<sub>2.5</sub>, consistent with the 80% rule effectiveness rate used by the EPA in the 2021 Proposed Rule.

Third, the EPA has proposed approval of Rule 4311 ("Flares"), as amended December 17, 2020.<sup>185</sup> The District's staff report for Rule 4311 estimates that the emission reductions from these amendments would be 0.19 tpd NO<sub>x</sub>

and 0.03 tpd direct PM<sub>2.5</sub> in 2025.<sup>186</sup> The EPA continues to evaluate the District's estimate with respect to SIP-creditable emission reductions, though we note that they are relatively small when compared to the overall 207.38 tpd NO<sub>x</sub> and 6.4 tpd direct PM<sub>2.5</sub> modeled to attain the 2012 PM<sub>2.5</sub> NAAQS and to the combined aggregate tonnage commitments of 33.88 tpd NO<sub>x</sub> and 2.2 tpd direct PM<sub>2.5</sub>.

Similar to our 2021 Proposed Rule, we propose to credit reductions from three measures, all of which are now approved into the SIP and have large associated emission reductions of direct PM<sub>2.5</sub> and/or NO<sub>x</sub> in the SJV.<sup>187</sup> The three measures are: Rule 4901 ("Wood Burning Fireplaces and Wood Burning Heaters"); two of three parts of the Agricultural Equipment Incentive Measure (for which we described our proposed SIP credit in the 2021 Proposed Rule); and the Agricultural Burning Phase-out Measure (for which we described our proposed SIP credit in this proposed rule).<sup>188</sup>

Based on these SIP-approved measures, our estimate of the remaining aggregate tonnage commitments remains the same as in our 2021 Proposed Rule. Specifically, in Table 1 herein we summarize the total NO<sub>x</sub> and direct PM<sub>2.5</sub> emission reductions that the State models as sufficient to attain the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV by December 31, 2025, the emission reductions attributed to baseline measures and new control strategy measures (including only measures currently approved into the California SIP), and the emission reductions remaining as aggregate tonnage commitments.

TABLE 1—REDUCTIONS FOR ATTAINMENT IN 2025 AND AGGREGATE TONNAGE COMMITMENTS

		NO <sub>x</sub> (tpd)	Direct PM <sub>2.5</sub> (tpd)
A .....	Total reductions from baseline and control strategy measures modeled to achieve attainment ..	207.38	6.4
B .....	Reductions from baseline measures .....	173.5	4.2
C .....	Reductions from additional measures <i>approved</i> into the California SIP .....	5.29	1.69
D .....	Total reductions remaining as commitments (A–B–C) .....	28.59	0.51
E .....	Percent of total reductions needed remaining as commitments (D/A) .....	13.8%	8.0%

Sources: 2018 PM<sub>2.5</sub> Plan, Ch. 4, tables 4–3 and 4–7, and Appendix B, tables B–1 and B–2.

<sup>180</sup> See 87 FR 36222 (June 16, 2022).

<sup>181</sup> 87 FR 27949 (May 10, 2022).

<sup>182</sup> 87 FR 36222.

<sup>183</sup> SJVUAPCD, "Supplemental Report and Recommendations on Agricultural Burning," June 17, 2021 ("2021 Supplemental Report"), including Table 2–1 ("Accelerated Reductions by Crop Category").

<sup>184</sup> Letter dated January 25, 2022, from Jonathan Klassen, Director of Air Quality Science and

Planning, SJVUAPCD, to Michael Regan, Administrator, U.S. EPA.

<sup>185</sup> 87 FR 3736 (January 25, 2022).

<sup>186</sup> SJVUAPCD, "Item Number 12: Adopt Proposed Amendments to Rule 4311 (Flares)," December 17, 2020, Attachment C ("Final Draft Staff Report with Appendices for Proposed Amendments to Rule 4311"), 21–22.

<sup>187</sup> The seven additional measures submitted as SIP revisions for which the EPA has not proposed action as of August 2022 include: the Innovative

Clean Transit measure (submitted February 13, 2020); Rules 4306 and 4320 (submitted March 12, 2021); Rule 4702 (submitted October 15, 2021); Rules 4352 and 4354 (submitted March 9, 2022), and the Residential Wood Burning Incentive Measure (submitted March 17, 2022).

<sup>188</sup> Final actions on these measures are as follows: 85 FR 44206 (July 22, 2020) (Rule 4901), 86 FR 73106 (December 27, 2021) (Agricultural Equipment Incentive Measure), and 87 FR 36222 (June 16, 2022) (Agricultural Burning Phase-out Measure).

As shown in Table 1, 13.8% of the NO<sub>x</sub> reductions necessary for attainment and 8.0% of the direct PM<sub>2.5</sub> reductions necessary for attainment remain as aggregate tonnage commitments (*i.e.*, combining CARB and the District’s remaining commitments).<sup>189</sup> Based on the direct PM<sub>2.5</sub> emission reductions that the EPA has credited to Rule 4901 (0.2 tpd) and the Agricultural Burning Phase-out Measure (1.23 tpd), which add up to 1.43 tpd, we conclude that the District has exceeded its 1.3 tpd direct PM<sub>2.5</sub> commitment by 0.13 tpd.

Beyond the measures that the EPA has taken final action to approve into the California SIP and proposed to credit herein, CARB has provided updated emission reduction estimates for 10 additional measures, including 9 that have been adopted, as well as one substitute measure in development, as described in the 2021 Progress Report. The CARB measure with the largest

updated emission reduction estimates is the Heavy-Duty Vehicle Inspection and Maintenance Program (“Heavy-Duty I/ M”).

The District has similarly provided updated emission reduction estimates for seven additional measures, including six that have been adopted. The District measures with the largest updated emission reduction estimates include amendments to Rule 4702 (“Internal Combustion Engines”) (0.61 tpd NO<sub>x</sub>), the Residential Wood Burning Devices Incentive Projects measure (0.33 tpd direct PM<sub>2.5</sub>), and Rule 4354 (“Glass Melting Furnaces”) (0.5 tpd NO<sub>x</sub> and 0.04 tpd direct PM<sub>2.5</sub>), as well as amendments planned in 2022 to Rule 4550 (“Conservation Management Practices”) (0.32 tpd direct PM<sub>2.5</sub>).

The EPA is not proposing to credit towards the aggregate tonnage commitments the updated emission reduction estimates from these

additional District measures. We will review and act on the CARB and District measures submitted to date (Innovative Clean Transit, Rule 4306, Rule 4320, Rule 4702, Rule 4352, Rule 4354, and the Residential Wood Burning Incentive Measure), as well as future measure submissions, in separate rulemakings, during which time the public will have an opportunity to review and provide comment.

Although we are not proposing to credit reductions from these measures at this time, in order to determine whether CARB and District have the capability to meet their aggregate tonnage commitments, we have re-evaluated the updated emission reduction estimates to assess whether they could meet the NO<sub>x</sub> and/or direct PM<sub>2.5</sub> emission reduction commitments with these measures or, if not, how much would remain of CARB and the District’s unfulfilled aggregate tonnage commitments.

TABLE 2—HYPOTHETICAL EMISSION REDUCTIONS FROM ESTIMATED, ADOPTED, AND/OR SUBMITTED ADDITIONAL MEASURES AND EFFECT ON REMAINING AGGREGATE TONNAGE COMMITMENTS FOR 2025

		NO <sub>x</sub> (tpd)	Direct PM <sub>2.5</sub> (tpd)
A	Total reductions needed from baseline and control strategy measures (see Table 1, row A of this proposed rule).	207.38	6.4
B	Total reductions remaining as commitments after SIP credit (see Table 1, row D of this proposed rule).	28.59	0.51
	<b>CARB:</b>		
	<i>Submitted Measures:</i>		
	HDVIP and PSIP <sup>a</sup> .....	0	0.02
	Innovative Clean Transit .....	0.017	<<0.01
C	Sub-Total .....	0.017	0.02
	<i>Additional Adopted Measures:</i>		
	Heavy-Duty I/M .....	14.7	0.03
	Amended Warranty Requirements for Heavy-Duty Vehicles .....	0.34	<<0.01
	Heavy-Duty Low-NO <sub>x</sub> Engine Standard—California Action .....	0	0
	Advanced Clean Local Trucks (Last Mile Delivery) .....	0.08	<<0.01
	Zero-Emission Airport Shuttle Buses .....	<<0.01	<<0.01
	Small Off-Road Engines .....	0.155	0.007
	Transport Refrigeration Units Used for Cold Storage .....	0.04	0.01
	Agricultural Equipment Incentive Measure-Phase 1 (NRCS portion) .....	0.64	0.04
	Agricultural Equipment Incentive Measure Phase 2 .....	4.9	0.5
D	Sub-Total .....	15.955	0.087
	<i>Measures Not Yet Presented for Board Consideration:<sup>b</sup></i>		
	Zero-Emission Off-Road Forklift Regulation Phase 1 .....	0.02	<<0.01
E	Sub-Total .....	4.92	0.5
F	<i>Grand Total for CARB (C+D+E)</i> .....	20.892	0.607
	<b>SJVUAPCD:</b>		
	<i>Submitted Measures:</i>		
	Rule 4311 (“Flares”) .....	0.19	0.03
	Rule 4306 (“Boilers, Steam Generators, and Process Heaters—Phase 3”) .....	0.19	0
	Rule 4320 (“Advanced Emission Reduction Option for Boilers, Steam Generators, and Process Heaters greater than 5 MMBtu/hr”) <sup>c</sup> .....	0	0
	Rule 4352 (“Solid Fuel Fired Boilers, Steam Generators, and Process Heaters”) .....	0.5	0.04
	Rule 4354 (“Glass Melting Furnaces”) .....	0.2	0.04

<sup>189</sup> However, we note that if the EPA were to grant maximum credit for the emission reductions calculated by the District for Rule 4311 (0.19 tpd

NO<sub>x</sub> and 0.03 tpd direct PM<sub>2.5</sub>), the remaining aggregate tonnage commitments would be 28.4 tpd NO<sub>x</sub> (13.7% of total reductions needed to attain in

2025) and 0.48 tpd direct PM<sub>2.5</sub> (7.5% of total reductions needed to attain in 2025).



TABLE 2—HYPOTHETICAL EMISSION REDUCTIONS FROM ESTIMATED, ADOPTED, AND/OR SUBMITTED ADDITIONAL MEASURES AND EFFECT ON REMAINING AGGREGATE TONNAGE COMMITMENTS FOR 2025—Continued

		NO <sub>x</sub> (tpd)	Direct PM <sub>2.5</sub> (tpd)
	Rule 4702 (“Internal Combustion Engines”) .....	0.61	0
	Residential Wood Burning Incentive Measure .....	0	0.33
G .....	Sub-Total .....	1.69	0.44
	<i>Measures Not Yet Presented for Board Consideration:</i>		
	Rule 4550 (“Conservation Management Practices”) .....	0	0.32
H .....	Sub-Total .....	0	0.32
I .....	<i>Grand Total for SJVUAPCD (G+H)</i> .....	1.69	0.76
J .....	<i>Grand Total (F+I)</i> .....	22.58	1.37
K .....	Assuming maximum SIP credit, total reductions remaining as commitments (B–J) .....	6.01	–0.86

Sources: 2021 Progress Report, Table 2 and Table 3.

<sup>a</sup>As discussed herein, the EPA has taken final action to approve CARB’s HDVIP and PSIP measure into the California SIP but we are not yet proposing SIP credit for these two measures.

<sup>b</sup>Given the complexities involved in regulating locomotive emissions, we have conservatively excluded from our analysis the emission reduction estimates in the 2021 Progress Report for CARB’s In-Use Locomotive Measure.

<sup>c</sup>The District’s draft staff report for Rule 4306 and Rule 4320 estimate emission reductions of 0.19 tpd NO<sub>x</sub> and 0.45 tpd NO<sub>x</sub>, respectively, in 2024. However, the District notes that it is not proposing the emission reductions from Rule 4320 for SIP credit at this time. SJVUAPCD, “Draft Staff Report, Proposed Amendments to Rule 4306 (Boilers, Steam Generators, and Process Heaters—Phase 3), Proposed Amendments to Rule 4320 (Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater Than 5.0 MMBtu/hr),” November 25, 2020, 4.

Assuming the EPA were to agree with the maximum credit for the emission reductions estimated by CARB and the District in the 2021 Progress Report, these additional measures could achieve emission reductions of 22.58 tpd NO<sub>x</sub> and 1.37 tpd direct PM<sub>2.5</sub>. Combined with the reductions from additional measures already approved by EPA into the California SIP (5.29 tpd NO<sub>x</sub> and 1.69 tpd direct PM<sub>2.5</sub>, per Row C of Table 1 of this proposed rule), the State would achieve emission reductions of 27.87 tpd NO<sub>x</sub> and 3.06 tpd direct PM<sub>2.5</sub>. Compared to the combined aggregate tonnage commitments, the State would have remaining aggregate tonnage commitments of 6.01 tpd NO<sub>x</sub> and would have exceeded the aggregate tonnage commitments by 0.86 tpd direct PM<sub>2.5</sub>. More specifically, CARB would have remaining commitments of 6.65 tpd NO<sub>x</sub> and 0.03 tpd direct PM<sub>2.5</sub>, and the District would have exceeded its commitments by 0.64 tpd NO<sub>x</sub> and 0.89 tpd direct PM<sub>2.5</sub>.

However, given the remaining NO<sub>x</sub> commitments for CARB, which are approximately 3% of the NO<sub>x</sub> emission reductions modeled to attain the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV by 2025, we have given additional consideration to the evidence of emission reductions for two source categories that have large emission reduction estimates: Heavy-Duty I/M and the Agricultural Equipment Incentive Measures, including the NRCS portion of the Phase 1 measure adopted by CARB in 2019 and the Phase 2

measure slated for 2024 consideration, per the 2021 Progress Report.

With respect to Heavy-Duty I/M, in the Valley State SIP Strategy, CARB originally estimated that it would achieve 6.8 tpd NO<sub>x</sub> and <0.1 tpd direct PM<sub>2.5</sub> in 2025 and described the regulatory concepts that would reflect the current (as of 2018) “advanced engine and exhaust control technologies, including on-board diagnostics (OBD).”<sup>190</sup> Since that time, as described in the State’s 2021 Progress Report and the EPA’s 2021 Proposed Rule, California has developed additional provisions related to Heavy-Duty I/M that the State estimates would achieve emission reductions of 14.7 tpd NO<sub>x</sub> and 0.03 tpd direct PM<sub>2.5</sub> in 2025.<sup>191</sup>

While the EPA would still not propose to approve a specific amount of SIP-creditable reductions until after the State submits such measure in final form to the EPA as a revision to the SIP, we have re-examined the role of the potential additional emission reductions from Heavy-Duty I/M presented by CARB. As a qualitative matter, we agree

<sup>190</sup> Valley State SIP Strategy, 19–20 and Table 8.

<sup>191</sup> 2021 Progress Report, 19. CARB notes that further detail on emission reduction calculations can be found in the CARB staff report on Heavy-Duty I/M, released October 15, 2021. See, CARB, “Staff Report: Initial Statement of Reasons, Public Hearing to Consider the Proposed Heavy-Duty Inspection and Maintenance Regulation,” October 8, 2021, (“Heavy-Duty I/M ISOR”) and App. H (“Proposed Heavy-Duty Inspection and Maintenance Regulation, Standardized Regulatory Impact Assessment”).

that the requirements under California Senate Bill 210 (2019) that heavy-duty vehicles comply with Heavy-Duty I/M in order to register annually with the California Department of Motor Vehicles, as well as the implementation of roadside emissions monitoring (*i.e.*, the Portable Emissions Acquisition System, “PEAQS”) in the SJV to detect high emitting vehicles between periodic test cycles, are tangible additions that would increase the emission reductions relative to what was contemplated at the time of Plan adoption in November 2018 (by the District) and January 2019 (by CARB).

As a quantitative matter, however, the scale of the estimated 14.7 tpd NO<sub>x</sub> emission reductions is roughly half the remaining aggregate commitment of 28.59 tpd NO<sub>x</sub> and represents 7.1% of the 207.38 tpd NO<sub>x</sub> modeled for attainment and a substantial increase from CARB’s original estimate of 6.8 tpd NO<sub>x</sub> (3.3% of the 207.38 tpd NO<sub>x</sub>). This 14.7 tpd NO<sub>x</sub> represents a substantial quantity that, pursuant to the Ninth Circuit Memorandum Opinion, must be supported by evidence to “ensure that California and the District have a plausible strategy for achieving this portion of the attainment strategy” in order to satisfy the second factor of the three-factor aggregate commitment test.<sup>192</sup> While CARB documented its extensive regulatory and technical

<sup>192</sup> See *Medical Advocates for Healthy Air v. EPA*, Case No. 20–72780, Dkt. #58–1, 7 (9th Cir., April 13, 2022).

analyses in the measure's Initial Statement of Reasons and associated appendices,<sup>193</sup> CARB has not provided the detailed basis of its calculations of 14.7 tpd NO<sub>x</sub> and 0.03 tpd direct PM<sub>2.5</sub> emission reductions to the EPA. Given that CARB may do so in a future control measure SIP submission, and we lack the record evidence to do so here, we do not suggest an alternative amount of emission reduction from Heavy-Duty I/M in this proposed rule. Rather, we note that the more detailed calculations and technical report necessary to support such an estimate, specific to the SJV and to annual average emission reductions in 2025, are not available, and therefore we do not have sufficient support in the record at this time to rely on the State's estimated reductions, in line with the Ninth Circuit Memorandum Opinion.

With respect to mobile agricultural equipment, the EPA has taken final action to approve the Funding Agricultural Replacement Measures for Emission Reductions (FARMER) program and the Carl Moyer Memorial Air Quality Standards Attainment Program ("Carl Moyer") portions of CARB's first incentive measure on agricultural equipment in the SJV ("Agricultural Equipment Incentive Measure-Phase 1") and proposed in our 2021 Proposed Rule to credit emission reductions of 4.46 tpd NO<sub>x</sub> and 0.26 tpd direct PM<sub>2.5</sub> towards CARB's aggregate tonnage commitments.<sup>194</sup> CARB has estimated that it will achieve 4.9 tpd additional NO<sub>x</sub> reductions, and 0.5 tpd additional direct PM<sub>2.5</sub> reductions through a second agricultural equipment incentive measure. In light of the Ninth Circuit Memorandum Opinion, and its finding that the EPA had not ensured that CARB and the District had a "plausible strategy" for achieving parts of the attainment strategy that relied on incentive-based reductions in the face of a budget shortfall for funding these measures, we must evaluate whether there is sufficient evidence in the record to establish a reasonable basis for concluding that any "Phase 2" agricultural equipment incentive measure will have sufficient funding to achieve the reductions ascribed to it.

As we noted in the EPA's 2021 Proposed Rule, fewer incentive-based emission reductions are needed to demonstrate attainment of the 2012

annual PM<sub>2.5</sub> NAAQS than were required in the portion of the SJV PM<sub>2.5</sub> Plan addressing the 2006 24-hour PM<sub>2.5</sub> NAAQS that was at issue in the *Medical Advocates* case.<sup>195</sup> In the Ninth Circuit Memorandum Opinion, the court pointed to a \$2.6 billion shortfall between what the EPA calculated to be a need for \$5 billion in funding and the more than \$2 billion in funding that the State had "identified or anticipated."<sup>196</sup> Notably, funding for the Carl Moyer, California Assembly Bill 617, and FARMER programs were included in the "identified or anticipated" portion of the State's funding analysis, and not the "incentive funding gap" for which the Court found EPA's explanations justifying approval to be overly speculative.<sup>197</sup> Accordingly, we do not consider reliance on reductions from a Phase 2 agricultural equipment incentive measure to be prohibited by the Ninth Circuit Memorandum Opinion, to the extent that a Phase 2 rule would rely on the same, existing programs, and provided that evidence of sufficient identified or reasonably anticipated funding exists in the record.

As described in the EPA's analysis of the cost-effectiveness of the Agricultural Equipment Incentive Measure-Phase 1, based on information provided by CARB, the total project costs resulting in these emission reductions were \$155 million for FARMER and \$125 million for Carl Moyer, or \$280 million combined.<sup>198</sup> As described in the EPA's 2021 Proposed Rule,<sup>199</sup> the SJV portion of the FARMER funding has typically been 80% of the State-wide allocation and the first three years of FARMER funding for the SJV were \$108 million (fiscal year 2017–2018), \$104.3 million (fiscal year 2018–2019), and \$43.84 million (fiscal year 2019–2020).<sup>200</sup> For the current fiscal year (2021–2022), the District accepted \$168.43 million in FARMER funds to replace agricultural

equipment in the SJV.<sup>201</sup> Similarly, we noted that CARB expects Carl Moyer funding to increase in future years, following the enactment of California Assembly Bill 1274.<sup>202</sup>

Thus, while future funding allocations are subject to annual State and local funding cycles, given the renewed, large investment in the fiscal year 2021–2022 FARMER program, potential for increases in funding for the Carl Moyer program, and the success of these programs in meeting enforceability criteria for purposes of crediting emission reductions, the EPA anticipates that CARB will be able to develop an additional agricultural equipment incentive measure ("Agricultural Equipment Incentive Measure-Phase 2") that has funding levels comparable or larger than those for Phase 1 (*i.e.*, including the \$168 million accepted by the District in March 2022) and that CARB's emission reduction estimates of 4.9 tpd NO<sub>x</sub> and 0.5 tpd direct PM<sub>2.5</sub> by 2025, per the 2021 Progress Report, are reasonable and supported by identified or reasonably anticipated funding.

However, we have not yet taken final action on the NRCS portion of the Agricultural Equipment Incentive Measure-Phase 1 and, for this proposed rule, do not rely on the estimated emission reductions for that portion of the Agricultural Equipment Incentive Measure-Phase 1 (*i.e.*, 0.64 tpd NO<sub>x</sub> and 0.04 tpd direct PM<sub>2.5</sub>). Looking forward in time, this suggests some uncertainty regarding creditability of emission reductions from any portion of a Phase 2 agricultural equipment incentive measure that may be implemented through the NRCS program.

Furthermore, for any measure, to the extent that CARB or the District assumed a 100% rule effectiveness rate where the EPA is not able to confirm and approve such a rate, further discounts to the emission reductions estimated may be warranted in certain cases.<sup>203</sup> Accordingly, the overall remaining NO<sub>x</sub> commitment could be larger than 6.01 tpd and the anticipated

<sup>195</sup> 86 FR 74310, 74330. This is due to greater-than-expected reductions from committed to and substitute non-incentive regulatory measures, such as the Agricultural Burning Phase-Out Measure.

<sup>196</sup> *Medical Advocates for Healthy Air v. EPA*, Case No. 20–72780, Dkt. #58–1, 7; 85 FR 44192, 44201.

<sup>197</sup> CARB Staff Report, 27 (Table 9).

<sup>198</sup> Memorandum dated June 22, 2020, from Rebecca Newhouse, EPA Region IX, to docket number EPA–R09–OAR–2019–0318, Subject: "Cost-effectiveness of Emission Reductions from the Valley Incentive Measure and Estimated Future Funding Needs for Additional Agricultural Equipment Replacements" ("EPA Cost-Effectiveness Memo").

<sup>199</sup> 86 FR 74310, 74337.

<sup>200</sup> CARB, "Funding Agricultural Replacement Measures for Emission Reductions (FARMER) Program, San Joaquin Valley APCD," as reported through September 30, 2020.

<sup>201</sup> SJVUAPCD, "Item Number 9: Accept \$168,425,600 in State FARMER Program Funds for Use in the District's Agricultural Equipment Replacement Project," March 17, 2022.

<sup>202</sup> 2021 Progress Report, 22.

<sup>203</sup> For example, the District originally sought SIP credit of 0.26 tpd direct PM<sub>2.5</sub> emission reductions from Rule 4901 and the EPA is proposing 0.2 tpd direct PM<sub>2.5</sub> based on a 75% rule effectiveness rate. Similarly, CARB and the District sought SIP credit of 1.04 tpd NO<sub>x</sub> and 1.54 tpd direct PM<sub>2.5</sub> emission reductions from the Agricultural Burning Phase-out Measure and the EPA is proposing 0.83 tpd NO<sub>x</sub> and 1.23 tpd direct PM<sub>2.5</sub> based on an 80% rule effectiveness rate.

<sup>193</sup> Heavy-Duty I/M ISOR and, for example, Heavy-Duty I/M ISOR, App. D ("Emissions Inventory Methods and Results, Proposed Heavy-Duty Inspection and Maintenance Regulation") and App. H ("Proposed Heavy-Duty Inspection and Maintenance Regulation, Standardized Regulatory Impact Assessment").

<sup>194</sup> 86 FR 74310, 74332; 86 FR 73106, 73109.

excess emission reductions for direct PM<sub>2.5</sub> could be smaller than 0.86 tpd.

Notwithstanding some uncertainty as to the scale of emission reductions from the Heavy-Duty I/M and the Agricultural Equipment Incentive Measures (*i.e.*, assuming that the additional measures with discrete emission reduction estimates in the 2021 Progress Report achieve their respective emission reductions), there remains at least 6.65 tpd NO<sub>x</sub> and 0.03 tpd direct PM<sub>2.5</sub> in CARB's commitment for which the record does not contain a specific and plausible strategy to achieve. In our 2021 Proposed Rule we discussed two possible ways that CARB could fill this gap: (1) additional reductions from committed or substitute measures named by CARB, and (2) a hypothetical inter-pollutant trading of excess direct PM<sub>2.5</sub> emission reductions by the District for any shortfall in NO<sub>x</sub> emission reductions by CARB. The Ninth Circuit Memorandum Opinion has established that these concepts in the absence of a specific SIP revision are too speculative and do not constitute a "plausible strategy" for achieving this portion of the commitment.

With respect to additional reductions from committed measures, in the 2021 Proposed Rule, we explored potential reductions from two incentive-based measures: Accelerated Turnover of Trucks and Buses Incentive Projects, and Accelerated Turnover of Off-road Equipment Incentive Projects.<sup>204</sup> CARB initially estimated that they would achieve 8 tpd NO<sub>x</sub> reductions from Accelerated Turnover of Trucks and Buses Incentive Projects, and 1.5 tpd NO<sub>x</sub> reductions from Accelerated Turnover of Off-road Equipment Incentive Projects.<sup>205</sup> However, CARB did not propose a measure to its board for either measure by 2021, as it had committed to do, nor to our knowledge has CARB started the public process for enforceable measures to be submitted to the EPA for inclusion as control measures in the California SIP.

In the 2021 Progress Report, CARB acknowledged that many of the project lives do not span the attainment year<sup>206</sup> and, thus, while these projects accelerate emission reductions and

benefit communities in the SJV, the projects that qualify for SIP credit may be limited for the purposes of the 2012 annual PM<sub>2.5</sub> NAAQS Serious area attainment demonstration. In our 2021 Proposed Rule, we acknowledged these weaknesses in these incentive programs, but we nonetheless assumed that these measures may ultimately result in SIP-creditable emission reductions for a portion of the combined 9.5 tpd NO<sub>x</sub>.<sup>207</sup> In light of the Ninth Circuit Memorandum Opinion, the EPA does not consider it appropriate to rely on reductions that have been rendered substantially less likely to occur by the State's update indicating that few emissions from these projects may be creditable.

Furthermore, while the State continues to invest heavily in the replacement of older, dirty heavy-duty vehicles and equipment on a State-wide basis,<sup>208</sup> we are not aware of a document that identifies specific funding amounts applied to the replacement of such equipment in the SJV within the specific timeline of the Plan's demonstration of attainment of the 2012 annual PM<sub>2.5</sub> NAAQS by December 31, 2025. In brief, the amount of funding that is specific to the SJV for these two measures for purposes of attainment of the 2012 annual PM<sub>2.5</sub> NAAQS is unclear, and this renders more speculative at least a portion of the large scale of NO<sub>x</sub> emission reductions originally anticipated.<sup>209</sup>

With respect to substitute measures under development, CARB points to the In-Use Locomotive Rule (and estimates emission reductions of 1.14 tpd NO<sub>x</sub> and 0.03 tpd direct PM<sub>2.5</sub> by 2025 in the SJV), which is slated for 2022 Board consideration.<sup>210</sup> However, as noted in our 2021 Proposed Rule,<sup>211</sup> given the complexities involved in regulating locomotive emissions, we have conservatively excluded from our analysis the emission reduction

<sup>207</sup> 86 FR 74310, 74335.

<sup>208</sup> See, *e.g.*, CARB, "Proposed Fiscal Year 2021–22 Funding Plan for Clean Transportation Investments, Appendix D: Long-Term Heavy-Duty Investment Strategy," release date October 8, 2021.

<sup>209</sup> The EPA also notes that, for regulatory measures that have large estimated emission reductions, rather than incentive-based measures, CARB estimated that its Low-Emission Diesel Fuel Requirement would achieve an additional 1 tpd NO<sub>x</sub> and 0.1 tpd direct PM<sub>2.5</sub> reductions. However, without near-term adoption and submission, its associated emission reductions may not be creditable towards the aggregate tonnage commitment for 2025.

<sup>210</sup> 2021 Progress Report, 20–21. Additional information on CARB's regulatory concepts for the In-Use Locomotive Measure are available at: <https://ww2.arb.ca.gov/our-work/programs/reducing-rail-emissions-california/locomotives-and-railyards-meetings-workshops>.

<sup>211</sup> 86 FR 74310, 74334, fn. 228.

estimates in the 2021 Progress Report for CARB's In-Use Locomotive Measure.

In addition, CARB has identified further measures that were not included in the original control measure commitments that may provide emission reductions toward CARB's aggregate tonnage commitments.<sup>212</sup> These measures include Cargo Handling Equipment Registration, Construction and Mining Equipment Measure, and Co-Benefits from the Climate Program. However, we do not have information as to what these measures might entail, when the State may adopt or implement them, and what scale of emission reductions they could potentially achieve.

Based on the lack of information on funding and process for heavy-duty and off-road equipment incentive-based measures and the lack of information on other potential substitute measures, such as a Construction and Mining Equipment Measure, and in light of the Ninth Circuit Memorandum Opinion, we have reconsidered our evaluation of this prospect and now propose that there is not sufficient evidence to show that the Valley State SIP Strategy contains a "plausible strategy" to achieve the remaining NO<sub>x</sub> and direct PM<sub>2.5</sub> emission reductions needed for attainment.

The other approach that the 2021 Proposed Rule discusses for filling the gap in CARB's strategy for achieving its commitment is based on a hypothetical future SIP revision. In the 2021 Progress Report, CARB and the District provided additional emissions analysis to assess how excess direct PM<sub>2.5</sub> emission reductions could be converted to equivalent NO<sub>x</sub> emission reductions using an inter-pollutant trading ratio rooted in the sensitivity analyses of the 2018 PM<sub>2.5</sub> Plan.<sup>213</sup> CARB and the District have not formally submitted this analysis as a SIP revision to the EPA or requested that the EPA apply such inter-pollutant trading for purposes of fulfilling the aggregate tonnage commitments through an equivalent amount of emission reductions.

Consistent with past EPA action on PM<sub>2.5</sub> planning SIP submissions for the SJV,<sup>214</sup> where the State submits a SIP

<sup>212</sup> CARB, "SJV PM<sub>2.5</sub> SIP Measure Tracking," September 2021, 3. Available at: <https://ww2.arb.ca.gov/resources/documents/2018-san-joaquin-valley-pm25-plan>.

<sup>213</sup> 2021 Progress Report, Table 4 and 33–37.

<sup>214</sup> For example, the EPA has approved an inter-pollutant trading mechanism for use in transportation conformity analyses for the 2006 24-hour PM<sub>2.5</sub> NAAQS. 85 FR 44192, 44204. In that same final rule, the EPA approved the State's demonstration that it had fulfilled prior aggregate tonnage commitments, in part, by using an inter-pollutant trading approach that the EPA found

<sup>204</sup> 86 FR 74310, 74335.

<sup>205</sup> Valley State SIP Strategy, Table 7.

<sup>206</sup> 2021 Progress Report at 24 and 32. Generally, mobile source incentive projects implemented under the Carl Moyer program are under contract only during the "project life" and may not be credited with SIP emission reductions after the project life ends. EPA Region IX "Technical Support Document for EPA's Rulemaking for the California State Implementation Plan California Air Resources Board Resolution 19–26 San Joaquin Valley Agricultural Equipment Incentive Measure," February 2020, 12–13.

revision that would substitute reductions in one pollutant to achieve a tonnage commitment concerning a different pollutant (e.g., substituting excess direct PM<sub>2.5</sub> reductions to satisfy a NO<sub>x</sub> reduction commitment), it must include an appropriate inter-pollutant trading (IPT) ratio and the technical basis for such ratio in the plan submission itself, along with the requisite public process. The EPA will review any such IPT ratio and its bases before approving or disapproving any such SIP revision. The possibility of a future SIP submission discussing IPT does not constitute a “plausible strategy” for achieving reductions that are modeled to result in attainment. Thus, at this time, we are not proposing to approve any particular inter-pollutant trading approach for purposes of meeting the aggregate tonnage commitments, nor applying any excess reductions of one pollutant towards fulfilling a portion of committed reductions of the other pollutant.

The additional evaluation we have discussed herein as part of our reconsideration of the State’s enforceable commitments requires us to re-evaluate the EPA’s three-factor test for enforceable commitments. Based on our reconsideration, and consistent with the Ninth Circuit Memorandum Opinion, we retain our proposed findings that the State’s commitments meet the first factor (the commitment represents a limited portion of the required reductions, i.e., 13.8% of the NO<sub>x</sub> and 8.0% of the direct PM<sub>2.5</sub> emission reductions necessary to attain) and the third factor (the commitment is for a reasonable and appropriate timeframe) of the three-factor test. However, we now propose that the State’s commitments do not meet the second factor (regarding the State’s capability to fulfill its commitments). Our analysis and findings for the first and third factors are presented in section IV.F.3.e of the 2021 Proposed Rule. We provide our reconsidered evaluation of the second factor as follows in this proposed rule.

As the EPA noted in our 2021 Proposed Rule, CARB and the District have been capable of developing and adopting many of the regulatory measures listed in their respective control measure commitments. However, the question before us more precisely is whether such substantial progress, coupled with the strategy submitted by the State for achieving the

remaining reductions which the State has modeled as leading to attainment, is sufficient to show that the State is capable of fulfilling its *entire* aggregate tonnage commitments by 2025. Several components of our reconsideration suggest that the State may not be capable of fulfilling the entire aggregate tonnage commitment, particularly with respect to NO<sub>x</sub> emission reductions from additional CARB measures.

First, in terms of additional measures for which CARB and the District provided updated emission reduction estimates, we have given additional consideration to the evidence of emission reductions for two source categories that have large emission reduction estimates: Heavy-Duty I/M and the Agricultural Equipment Incentive Measures. For Heavy-Duty I/M, CARB has not provided to the EPA a sufficient basis for its increase in estimated emission reductions from 6.8 tpd NO<sub>x</sub> to 14.7 tpd NO<sub>x</sub>, where the 14.7 tpd reduction amounts to 7.1% of the total emission reductions modeled for attainment of the 2012 annual PM<sub>2.5</sub> NAAQS. Although the EPA is confident, based on its review, that emission reductions are available in this category, and that the State is capable of achieving some amount of reductions, the State has not sufficiently supported its assertion that it is capable of achieving 14.7 tpd of NO<sub>x</sub> and 0.03 tpd of direct PM<sub>2.5</sub>. As discussed above, due to uncertainty surrounding the NRCS portion of the Agricultural Equipment Incentive Measure-Phase 1, we are not relying on reductions from that portion of the rule, and the creditability of any NRCS portion of a potential future Phase 2 has not been established.

Furthermore, for any measure, to the extent that CARB or the District assumed a 100% rule effectiveness rate where the EPA is not able to confirm and approve such a rate, further discounts to the emission reduction estimates may be warranted in certain cases.

Accordingly, the overall remaining NO<sub>x</sub> commitment could be larger than 6.01 tpd and the anticipated excess emission reductions for direct PM<sub>2.5</sub> could be smaller than 0.86 tpd.

Second, even if the EPA were to assume maximum credit for the additional measures for which CARB and the District provided updated emission reduction estimates, CARB, in combination with the District, would still need emission reductions of at least 6 tpd NO<sub>x</sub> to fulfill its commitments.<sup>215</sup>

Moreover, the reductions from CARB’s remaining incentive measures for Heavy-Duty vehicles and off-road equipment appear to be limited relative to the combined emission reduction estimate of 9.5 tpd NO<sub>x</sub> in the Plan. Without documentation supporting the funding amounts to be applied in the SJV within the timeline of the 2012 annual PM<sub>2.5</sub> NAAQS portion of the SJV PM<sub>2.5</sub> Plan, it is not clear that the full amount of these estimated reductions is supported by a “plausible strategy” to achieve them, as required in the Ninth Circuit Memorandum Opinion. In addition, the identified substitute measures lack sufficient detail to provide support for making up for NO<sub>x</sub> emission reduction shortfalls from CARB’s control measure commitments.

Given the gap between the reductions needed and the reductions for which CARB and the District have presented a non-speculative plan for achieving, we now propose that the State has not demonstrated that it is capable of fulfilling the remaining aggregate tonnage commitments necessary to attain the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV by December 31, 2025, and therefore find that the SJV PM<sub>2.5</sub> Plan does not meet the second factor of our three-factor test for enforceable commitments.

#### b. Attainment Demonstration

Based on our reconsideration of the Plan’s enforceable commitments described in section II.C.3.a of this proposed rule, and our reconsideration of the Plan’s BACM demonstration for described in section II.B, we now propose to disapprove the SJV PM<sub>2.5</sub> Plan’s modeled attainment demonstration for the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV by December 31, 2025. We discuss the interrelationship of these nonattainment plan elements as follows.

Regarding enforceable commitments, CAA section 110(a)(2)(A) provides that each SIP “shall include enforceable emission limitations and other control measures, means or techniques . . . as well as schedules and timetables for compliance, as may be necessary or appropriate to meet the applicable requirements of [the Act].” Section 172(c)(6) of the Act, which applies to nonattainment SIPs, is virtually identical to section 110(a)(2)(A). The EPA interprets the CAA to allow for approval of enforceable commitments that are limited in scope, where circumstances exist that warrant the use of such commitments in place of

have exceeded its aggregate tonnage commitments by 0.64 tpd NO<sub>x</sub> and 0.89 tpd direct PM<sub>2.5</sub>.

adequate. 85 FR 44192, 44205; see also proposed rule at 85 FR 17382, 17406–17407 and associated EPA’s General Evaluation TSD, Table III–C and section IV.

<sup>215</sup> As noted in this proposed rule, if the EPA were to assume credit for emission reductions from the additional District measures, the District would

adopted and submitted measures, and considers three factors in determining whether to approve the enforceable commitment.

Given our proposed finding above that the State has not met the second factor of the EPA's three-factor test (*i.e.*, whether the State is capable of fulfilling its commitment), the State is left with a gap between the reductions that it has modeled as necessary for attainment, and the reductions that the EPA may count as constituting the State's control plan. Therefore, the EPA proposes that the State's control strategy does not include sufficient enforceable measures, pursuant to CAA sections 110(a)(2)(A) and 172(c)(6), to achieve the necessary emission reductions to attain the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV by December 31, 2025.

The lack of an approved control plan to achieve the reductions necessary to attain by 2025 is sufficient on its own to compel disapproval of the attainment demonstration. However, even if the State's control plan was sufficient to lead to attainment in 2025, the Public Justice Comment Letter and our reconsidered BACM analysis in section II.B of this notice raise additional issues regarding the sufficiency of the modeled attainment demonstration.

The State's attainment demonstration identifies the Bakersfield-Planz monitor as the design value monitor, and models this monitor as achieving the 12.0 µg/m<sup>3</sup> concentration necessary for attainment in 2025.<sup>216</sup> The State's submission also indicates that the Bakersfield-Planz monitor is modeled to read 12.1 µg/m<sup>3</sup> in 2024.<sup>217</sup> This represents a very narrow margin between modeled attainment in 2024 and 2025. In light of the Act's requirement to demonstrate attainment by the most expeditious date practicable, in order for the EPA to approve the Plan's demonstration that the area will attain by 2025, the State must also demonstrate that attainment by an earlier date is not practicable.

As explained in section II.B of this notice, the EPA now proposes to find that the State has not sufficiently demonstrated that it has implemented BACM for all necessary categories of sources. Most notably, the State has not sufficiently evaluated the amount of ammonia reductions that may be available. In light of the very small (0.1 µg/m<sup>3</sup>) gap between attaining in 2024 and 2025, and the State's sensitivity modeling in its precursor demonstration indicating that a 30% reduction in ammonia would reduce annual PM<sub>2.5</sub> concentrations at the Bakersfield-Planz

monitor by 0.12 µg/m<sup>3</sup> and a 70% reduction would reduce annual PM<sub>2.5</sub> concentrations at the Bakersfield-Planz monitor by 0.36 µg/m<sup>3</sup>, the State has not demonstrated that reductions from sources identified in section II.B could not expedite attainment.<sup>218</sup> As a result, even if the State's control plan was sufficiently concrete that the EPA could credit all reductions of NO<sub>x</sub> and direct PM<sub>2.5</sub> that the State indicated that it intended to use to fulfill its aggregate commitments, the State is still required to demonstrate that the selected attainment year (*e.g.*, 2025) is as expeditious as practicable considering potential emission reductions from all plan precursors, including ammonia.

The EPA emphasizes that it is stating both that the Plan does not demonstrate that the SJV will attain by 2025 and that the State has not demonstrated that it could not attain sooner than 2025. These findings are not in tension with one another. Under the Act, the State must demonstrate that its control plan will be sufficient to attain the NAAQS, and to attain the NAAQS by the most expeditious date practicable. The State's failure to demonstrate that it could not attain sooner than 2025 is not inconsistent with the State also having other analytical or substantive flaws in its control plan to attain by 2025. The EPA is not proposing to find that the SJV can practicably attain by 2024, nor is the EPA proposing to find that the SJV could not possibly attain by 2025. Instead, the EPA is proposing, in light of the uncertainty regarding ammonia controls, to find that the State has failed to demonstrate that it could not practicably attain before 2025, and in light of identified deficiencies in the control plan, that the State's control strategy for attaining by 2025 is flawed.

Furthermore, for the 1997 annual PM<sub>2.5</sub> NAAQS, on November 8, 2021, the State submitted the "Attainment Plan Revision for the 1997 Annual PM<sub>2.5</sub> Standard," which was adopted by the District on August 19, 2021, and by CARB on September 23, 2021 ("15 µg/m<sup>3</sup> SIP Revision"). In that submission, the State updated its prior air quality modeling to account for more recent monitored air quality data. Specifically, the State estimated 2023 annual average concentrations starting from a 2018 monitored base year (*i.e.*, rather than a 2013 base year, in order to reflect updated monitored air quality data), and applied updated, scaled relative response factors (RRFs) to reflect emissions changes between 2018 and

2023.<sup>219</sup> Because this scaling indicated a significant change in the modeling results for the 1997 annual PM<sub>2.5</sub> NAAQS, and the modeling for the 2012 annual PM<sub>2.5</sub> NAAQS relies on many of the same models and assumptions, the result of the scaling analysis introduces additional uncertainty to the modeled attainment demonstration for the 2012 PM<sub>2.5</sub> NAAQS. Accordingly, we recommend updated modeling analysis for the 2012 annual PM<sub>2.5</sub> NAAQS.

As a result of our proposed disapproval of the control plan and the uncertainty regarding additional reductions that could be achieved by further BACM/BACT level controls for all appropriate plan precursors (particularly for ammonia), we now propose to disapprove the attainment demonstration for the 2012 annual PM<sub>2.5</sub> NAAQS.

#### *D. Reasonable Further Progress Demonstration and Quantitative Milestones*

##### 1. Summary of 2021 Proposed Rule

In section IV.G of our 2021 Proposed Rule, the EPA described the requirements for RFP and quantitative milestones for a Serious PM<sub>2.5</sub> nonattainment area, summarized the State's submission in the 2018 PM<sub>2.5</sub> Plan for the SJV, and presented our evaluation thereof.<sup>220</sup> We briefly summarize those components here and rely on the more complete exposition in that proposed rule, except as described in section II.D.2 of this proposed rule (*i.e.*, the EPA's reconsidered proposal for RFP and quantitative milestones).

Regarding 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<sub>2.5</sub> nonattainment area plans contain quantitative milestones for purposes of measuring RFP, as defined in CAA section 171(1), every three years until the EPA redesignates the area to attainment. Section 171(1) of the Act defines RFP as the annual incremental reductions in emissions of the relevant air pollutant as are required by part D, title I of the Act, or as may reasonably be required by the Administrator for the purpose of ensuring attainment of the

<sup>219</sup> 15 µg/m<sup>3</sup> SIP Revision, Ch. 5, 5–9 to 5–12. See also 15 µg/m<sup>3</sup> SIP Revision, App. K, 64–65. In the 15 µg/m<sup>3</sup> SIP Revision, the State used existing modeling runs for 2020 and 2024 to compute RRFs for each PM<sub>2.5</sub> component using the standard approach recommended in the EPA's Modeling Guidance. Those RRFs were then scaled to reflect emissions changes between 2018 and 2023 to arrive at updated RRFs.

<sup>220</sup> 86 FR 74310, 74338–74345.

<sup>216</sup> 2018 PM<sub>2.5</sub> Plan, App. K, Table 39.

<sup>217</sup> *Id.* at Table 33.

<sup>218</sup> See 2018 PM<sub>2.5</sub> Plan, App. G, tables 4 through 7.

NAAQS by the applicable attainment date.

In addition to the EPA's longstanding guidance on the RFP requirements for PM, the Agency has established specific regulatory requirements for the PM<sub>2.5</sub> NAAQS in the PM<sub>2.5</sub> SIP Requirements Rule for purposes of satisfying the Act's RFP requirements and provided related guidance in the preamble to the rule. Specifically, under the PM<sub>2.5</sub> SIP Requirements Rule, for a PM<sub>2.5</sub> attainment plan a State must include 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<sub>2.5</sub> and all PM<sub>2.5</sub> plan precursors for each applicable milestone year, based on the anticipated control measure implementation schedule; (3) a demonstration that the control strategy and implementation schedule will achieve reasonable progress toward attainment between the base year and the attainment year; and (4) a demonstration that by the end of the calendar year for each triennial milestone date for the area, pollutant emissions will be at levels that reflect either generally linear progress or stepwise progress in reducing emissions on an annual basis between the base year and the attainment year.<sup>221</sup> Additionally, states should estimate the RFP projected emissions for each quantitative milestone year by sector on a pollutant-by-pollutant basis.<sup>222</sup>

Section 189(c) of the Act requires that PM<sub>2.5</sub> attainment plans include quantitative milestones that demonstrate RFP. The purpose of the quantitative milestones is to allow periodic evaluation of the State's progress towards attainment of the PM<sub>2.5</sub> NAAQS in the area consistent with RFP requirements. Because RFP is an annual emission reduction requirement and the quantitative milestones are to be achieved every three years, when a State demonstrates compliance with the quantitative milestone requirement, it should also demonstrate that RFP has been achieved during each of the relevant three years. Quantitative milestones should provide an objective means to evaluate progress toward attainment meaningfully, *e.g.*, through imposition of emissions controls in the attainment plan and the requirement to quantify those required emissions reductions on the schedule approved by the EPA and thus required to meet RFP.

As we noted in the 2021 Proposed Rule, 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.<sup>223</sup> Consistent with this longstanding interpretation of the Act, the PM<sub>2.5</sub> SIP Requirements Rule requires that each plan for a Serious PM<sub>2.5</sub> nonattainment area that demonstrates attainment by the end of the 10th calendar year following the date of designation contain quantitative milestones to be achieved no later than milestone dates 7.5 years and 10.5 years from the date of designation of the area.<sup>224</sup> The 2018 PM<sub>2.5</sub> Plan includes a demonstration designed to show attainment by the end of the 10th calendar year following designations (*i.e.*, December 31, 2025). Because the EPA designated the SJV nonattainment for the 2012 annual PM<sub>2.5</sub> NAAQS effective April 15, 2015,<sup>225</sup> the applicable quantitative milestone dates for purposes of the submitted Serious area plan for this NAAQS in the SJV are October 15, 2022, and October 15, 2025.

Quantitative milestones must provide for objective evaluation of reasonable further progress toward timely attainment of the PM<sub>2.5</sub> 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.<sup>226</sup>

The State presents its RFP demonstration and quantitative milestones for the 2012 annual PM<sub>2.5</sub> NAAQS in Appendix H of the 2018 PM<sub>2.5</sub> Plan. Following the identification of a transcription error in the RFP tables of Appendix H, the State submitted a revised version of Appendix H that corrects the transcription error and provides additional information on the RFP demonstration.<sup>227</sup> Given the State's conclusions that ammonia, SO<sub>x</sub>, and VOC emissions do not contribute significantly to PM<sub>2.5</sub> levels that exceed the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV, the RFP demonstration provided by the State only addresses emissions of

direct PM<sub>2.5</sub> and NO<sub>x</sub>.<sup>228</sup> Similarly, the State developed quantitative milestones based upon the Plan's control measure strategy to achieve emission reductions of direct PM<sub>2.5</sub> and NO<sub>x</sub>.<sup>229</sup>

For the 2012 annual PM<sub>2.5</sub> NAAQS, the RFP demonstration in the Plan follows a stepwise approach due to the time required for CARB and the District "to amend rules, develop programs, and implement the emission reduction measures."<sup>230</sup> The revised Appendix H provides clarifying information on the RFP demonstration, including additional information to justify the Plan's stepwise approach to demonstrating RFP. This clarifying information did not affect the Plan's quantitative milestones. It is important to note that the State evaluated what would be necessary for purposes of meeting RFP premised upon its approach to regulating only direct PM<sub>2.5</sub> and NO<sub>x</sub> emissions, and upon a December 31, 2025 attainment date that itself depended upon the State achieving certain additional emission reductions through the enforceable commitments.

In our 2021 Proposed Rule we further described the State's RFP demonstration and quantitative milestones in the SJV PM<sub>2.5</sub> Plan, including, for example, the anticipated implementation schedule for CARB and District control measures, projected emissions for each RFP year and attainment year, and percent reductions to be achieved in each milestone year, which would be consistent with a stepwise approach. We noted that the reductions between the 2013 base year and 2019 milestone year are consistent with generally linear progress toward the targeted attainment date, while the reductions by the 2022 milestone year would fall short of the rate of reductions to show generally linear RFP. We also noted that the State relies on more substantial direct PM<sub>2.5</sub> and NO<sub>x</sub> emission reductions by January 1, 2025, due in large part to CARB and the District's reliance on enforceable commitments to achieve additional PM<sub>2.5</sub> and NO<sub>x</sub> emission reductions from new measures implemented by 2024. Lastly, we noted the State's overall conclusion that the adopted control strategy and additional commitments for reductions from new control programs by this time are adequate to meet the RFP requirement for the 2012 annual PM<sub>2.5</sub> NAAQS with

<sup>223</sup> General Preamble, 13539 and General Preamble Addendum, 42016.

<sup>224</sup> 40 CFR 51.1013(a)(2)(i).

<sup>225</sup> 80 FR 2206.

<sup>226</sup> 81 FR 58010, 58064 and 58092.

<sup>227</sup> Appendix H to 2018 PM<sub>2.5</sub> Plan, submitted February 11, 2020, via the EPA State Planning Electronic Collaboration System. This revised version of Appendix H replaces the version submitted with the 2018 PM<sub>2.5</sub> Plan on May 10, 2019. All references to Appendix H in this proposed rule are to the revised version of Appendix H submitted February 11, 2020.

<sup>228</sup> 2018 PM<sub>2.5</sub> Plan, App. H, H-1.

<sup>229</sup> *Id.* at App. H, H-23 to H-24 (for CARB milestones) and H-20 to H-22 (for District milestones).

<sup>230</sup> *Id.* at App. H, H-4.

<sup>221</sup> 40 CFR 51.1012(a).

<sup>222</sup> 81 FR 58010, 58056.

the projected attainment date of December 31, 2025.

Regarding quantitative milestones, Appendix H of the 2018 PM<sub>2.5</sub> Plan identifies October 15 milestone dates for the 2019 and 2022 RFP milestone years, the 2025 attainment year, and a post-attainment milestone year of 2028.<sup>231</sup> Appendix H also identifies target emissions levels to meet the RFP requirement for direct PM<sub>2.5</sub> and NO<sub>x</sub> emissions for each of these milestone years,<sup>232</sup> as shown in Table 6 of our 2021 Proposed Rule, and control measures that CARB and the District already have in place or plan to implement by each of these years, in accordance with the control strategy in the Plan.<sup>233</sup>

We noted, however, that while quantitative milestones are required for 2019 in the context of the Moderate area plan for the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV (corresponding to the 4.5 years after the date of designation), we have already evaluated and approved the State's quantitative milestones for 2019, as supplemented by the 2018 PM<sub>2.5</sub> Plan.<sup>234</sup> Therefore, the EPA is not evaluating the 2019 milestones for purposes of the State's Serious area plan for the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV.

Although the State's attainment demonstration for the 2012 annual PM<sub>2.5</sub> NAAQS does not rely on CARB's and the District's control measure commitments for emission reductions until 2024,<sup>235</sup> the RFP and quantitative milestone elements of the 2018 PM<sub>2.5</sub> Plan rely on these control measure commitments to demonstrate that the plan requires RFP toward attainment.<sup>236</sup> In our 2021 Proposed Rule we summarized the specific milestones identified by the State for each milestone year and with respect to the control measure commitments in each three-year period.

The EPA presented its evaluation of the State's RFP demonstration and quantitative milestones in section IV.G.3 of the 2021 Proposed Rule, with additional information in section V of

the EPA's 2012 Annual PM<sub>2.5</sub> TSD. We previously proposed to approve the State's RFP demonstration and quantitative milestones.

## 2. The EPA's Reconsidered Proposal

As discussed in section II.C.3, we are now proposing to disapprove the attainment demonstration for the Serious area plan portion of the 2018 PM<sub>2.5</sub> Plan for the 2012 annual PM<sub>2.5</sub> NAAQS because we are proposing to not approve the State's control plan to achieve the reductions modeled for 2025 and the attainment demonstration does not demonstrate that the SJV could not practicably attain before 2025. The RFP demonstration in the Plan is deficient because it sets out a timeline for implementing the deficient control plan, which is not sufficient to "ensure attainment" under CAA section 171(l). The quantitative milestones do not "demonstrate [RFP] toward attainment by the applicable date" under CAA section 189(c), both because the Plan does not sufficiently demonstrate that the control plan will result in attainment, and because the plan does not sufficiently establish what the applicable date should be.<sup>237</sup> As a result, the EPA proposes to disapprove the Plan's Serious area RFP demonstration and quantitative milestones for the 2012 annual PM<sub>2.5</sub> NAAQS.

### E. Motor Vehicle Emission Budgets

#### 1. Summary of 2021 Proposed Rule

In section IV.I of our 2021 Proposed Rule, the EPA described the requirements for motor vehicle emission budgets ("budgets") for a Serious PM<sub>2.5</sub> nonattainment area, summarized the State's submission in the 2018 PM<sub>2.5</sub> Plan for the SJV, and presented our evaluation thereof.<sup>238</sup> We briefly summarize those components here and rely on the more complete exposition in that proposed rule, except as described in section II.E.2 of this proposed rule

<sup>237</sup> In addition, as discussed in section II.C.3.a of this proposed rule, the EPA notes that of the State's 27 control measure commitments, four regulatory measures and four incentive-based measures are overdue (*i.e.*, were due for board consideration in 2020 or 2021). It is not clear, based on the evidence before the EPA, that such measures will be presented to the CARB and District boards in the 2022 calendar year. Furthermore, to the extent the State relies on substitute measures to ultimately fulfill its aggregate tonnage commitments in 2025 (*e.g.*, the Agricultural Burning Phase-out Measure), the State has not provided quantitative milestones as part of a SIP revision that would provide for periodic evaluation of the State's progress in implementing such substitute measures. In addition, the State has not provided quantitative milestones for ammonia.

<sup>238</sup> 86 FR 74310, 74347–74351.

(*i.e.*, the EPA's reconsidered proposal for budgets).

Section 176(c) of the CAA requires federally funded or approved actions in nonattainment and maintenance areas to conform to the SIP's goals of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of the NAAQS. Conformity to the SIP's goals means that such actions will not: (1) cause or contribute to new violations of a NAAQS; (2) increase the frequency or severity of an existing violation; or (3) delay timely attainment of any NAAQS or any interim milestone.

Actions involving Federal Highway Administration (FHWA) or Federal Transit Administration (FTA) funding or approval are subject to the EPA's transportation conformity rule, codified at 40 CFR part 93, subpart A ("Transportation Conformity Rule"). Under this rule, metropolitan planning organizations (MPOs) in nonattainment and maintenance areas coordinate with State and local air quality and transportation agencies, the EPA, FHWA, and FTA to demonstrate that an area's regional transportation plan (RTP) and transportation improvement programs (TIP) conform to the applicable SIP. The MPO's demonstration is typically done by showing that estimated emissions from existing and planned highway and transit systems are less than or equal to the applicable budgets contained in adequate or approved control strategy implementation plans. An attainment plan for the PM<sub>2.5</sub> NAAQS should include budgets for the attainment year and each required RFP milestone year for direct PM<sub>2.5</sub> and PM<sub>2.5</sub> precursors subject to transportation conformity analyses. Budgets are generally established for specific years and specific pollutants or precursors and must reflect all of the motor vehicle control measures contained in the attainment and RFP demonstrations.<sup>239</sup>

In our 2021 Proposed Rule, we described how states should identify budgets for direct PM<sub>2.5</sub>, NO<sub>x</sub>, and all other PM<sub>2.5</sub> precursors for which the State and/or the EPA has determined that on-road emissions significantly contribute to PM<sub>2.5</sub> levels in the area for each RFP milestone year and the attainment year if the plan demonstrates attainment.<sup>240</sup> All direct PM<sub>2.5</sub> SIP budgets should include direct PM<sub>2.5</sub> motor vehicle emissions from tailpipes, brake wear, and tire wear.

We described the process by which the State and the EPA should determine

<sup>239</sup> 40 CFR 93.118(e)(4)(v).

<sup>240</sup> 40 CFR 93.102(b)(2)(iv) and (v).

<sup>231</sup> 2018 PM<sub>2.5</sub> Plan, App. H, Table H–12.

<sup>232</sup> *Id.* at Table H–5.

<sup>233</sup> *Id.* at H–23 to H–24 (for CARB milestones) and H–20 to H–22 (for District milestones).

<sup>234</sup> 86 FR 67343, 67346.

<sup>235</sup> 2018 PM<sub>2.5</sub> Plan, Ch. 4, Table 4–3 ("Emission Reductions from District Measures") and Table 4–9 ("San Joaquin Valley Expected Emission Reductions from State Measures").

<sup>236</sup> 2018 PM<sub>2.5</sub> Plan, App. H, H–4 to H–10 (describing commitments by CARB and SJVUAPCD to adopt additional measures to fulfill tonnage commitments for 2024 and 2025, including "action" and "implementation" dates occurring before 2024 to ensure expeditious progress toward attainment).

whether other pollutant emissions (*i.e.*, for re-entrained road dust, VOC, SO<sub>2</sub>, and ammonia) contribute significantly to the PM<sub>2.5</sub> nonattainment problem, either with respect to the whole plan or with respect to on-road mobile emissions, and therefore be subject to the transportation conformity requirements (*i.e.*, budgets for such pollutant(s) must be included in the plan). We further noted that transportation conformity trading mechanisms are allowed under 40 CFR 93.124 where a State establishes appropriate mechanisms for such trades and where the basis for the trading mechanism is the SIP attainment modeling that establishes the relative contribution of each PM<sub>2.5</sub> precursor pollutant.

The EPA’s process for determining the adequacy of a budget consists of three basic steps: (1) notifying the public of a SIP submittal; (2) providing the public the opportunity to comment on the budgets during a public comment period; and (3) making a finding of adequacy or inadequacy.<sup>241</sup> The EPA can notify the public by either posting an announcement on the EPA’s adequacy website notifying the public that the EPA has received a SIP submission that will be reviewed to determine if the budgets in that submission are adequate for transportation conformity purposes (40 CFR 93.118(f)(1)), or through a **Federal Register** notice of proposed rulemaking when the EPA reviews the adequacy of submitted motor vehicle emission budgets simultaneously with its review and action on the SIP itself (40 CFR 93.118(f)(2)).

The State includes budgets for direct PM<sub>2.5</sub> and NO<sub>x</sub> emissions for the 2019

and 2022 RFP milestone years, the projected attainment year (2025), and one post-attainment year quantitative milestone (2028) in the 2018 PM<sub>2.5</sub> Plan.<sup>242</sup> The State establishes separate direct PM<sub>2.5</sub> and NO<sub>x</sub> subarea budgets for each county, or partial county (for Kern County), in the SJV.<sup>243</sup> CARB calculated the budgets using EMFAC2014,<sup>244</sup> which was, at the time, CARB’s latest version of the EMFAC model for estimating emissions from on-road vehicles operating in California that had been approved by EPA at the time of Plan development, and the latest modeled vehicle miles traveled and speed distributions from the SJV MPOs from the Final 2017 Federal Transportation Improvement Programs, adopted in September 2016. The budgets reflect annual average emissions consistent with the annual averaging period of the 2012 annual PM<sub>2.5</sub> NAAQS and the 2018 PM<sub>2.5</sub> Plan’s RFP demonstration.

In our 2021 Proposed Rule, the EPA noted the following: (1) 2022 and 2025 are the required budget years applicable to the Serious area plan portion of the 2018 PM<sub>2.5</sub> Plan for the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV (and that the attainment year of 2025 coincided with the latter milestone year based on timing of designations); (2) the EPA had approved the budgets for the 2022 RFP milestone year in acting on the Moderate area plan and, therefore, will not be acting on them again in acting on the Serious area plan; <sup>245</sup> (3) the EPA is not evaluating the 2019 budgets, which would neither be used in any future conformity determinations (as the plan contains budgets for 2022 and other future years), nor required for the

submitted Serious area plan; and (4) the EPA would begin the motor vehicle emissions budget adequacy and approval review processes for the 2028 post-attainment milestone year budgets only if the area were to fail to attain the standard by December 31, 2025 (the applicable Serious area attainment date if the EPA were to finalize approval of the 2018 PM<sub>2.5</sub> Plan’s attainment demonstration).

The Plan’s direct PM<sub>2.5</sub> budgets include tailpipe, brake wear, and tire wear emissions but do not include paved road dust, unpaved road dust, and road construction dust emissions.<sup>246</sup> The State did not include budgets for VOC, SO<sub>2</sub>, or ammonia, consistent with its precursor demonstration that control of these precursors would not significantly contribute to attainment of the 2012 annual PM<sub>2.5</sub> NAAQS. The State also included a discussion of the significance/insignificance factors for motor vehicle emissions of ammonia, SO<sub>2</sub>, and VOC to support a finding of insignificance under the transportation conformity rule.<sup>247</sup> The State is not required to include re-entrained road dust in the PM<sub>2.5</sub> budgets under section 93.103(b)(3) unless the EPA or the State has made a finding that these emissions are significant, and neither the State nor the EPA has made such a finding. Nevertheless, the Plan includes a discussion of the significance/insignificance factors for re-entrained road dust and concludes that such emissions are insignificant.<sup>248</sup> The budgets included in the 2018 PM<sub>2.5</sub> Plan are shown in Table 3 of this proposed rule, which is identical to Table 9 of our 2021 Proposed Rule.

TABLE 3—MOTOR VEHICLE EMISSION BUDGETS FOR THE SAN JOAQUIN VALLEY FOR THE 2012 PM<sub>2.5</sub> STANDARD  
[Annual average, tpd]

County	2022 (RFP year) <sup>a</sup>		2025 (attainment year)	
	PM <sub>2.5</sub>	NO <sub>x</sub>	PM <sub>2.5</sub>	NO <sub>x</sub>
Fresno .....	0.9	21.2	0.8	14.3
Kern .....	0.8	19.4	0.8	12.8
Kings .....	0.2	4.1	0.2	2.7
Madera .....	0.2	3.5	0.2	2.3
Merced .....	0.3	7.6	0.3	5.0
San Joaquin .....	0.6	10.0	0.6	6.9
Stanislaus .....	0.4	8.1	0.4	5.6
Tulare .....	0.4	6.9	0.4	4.7

Source: 2018 PM<sub>2.5</sub> Plan, Appendix D, Table 3–3. Budgets are rounded to the nearest tenth of a ton.

<sup>241</sup> 40 CFR 93.118(f).

<sup>242</sup> 2018 PM<sub>2.5</sub> Plan, App. D, Table 3–3.

<sup>243</sup> 40 CFR 93.124(c) and (d).

<sup>244</sup> EMFAC is short for Emission FACtor. The EPA announced the availability of the EMFAC2014 model for use in State implementation plan

development and transportation conformity in California on December 14, 2015. The EPA’s approval of the EMFAC2014 emissions model for SIP and conformity purposes was effective on the date of publication of the notice in the **Federal Register**.

<sup>245</sup> 86 FR 67343, 67346.

<sup>246</sup> 2018 PM<sub>2.5</sub> Plan, App. D, D–122 to D–123.

<sup>247</sup> 40 CFR 93.109(f).

<sup>248</sup> 2018 PM<sub>2.5</sub> Plan, App. D, D–121.



<sup>a</sup>The EPA has already approved the 2022 RFP budgets in our final rule on the State's Moderate area plan for the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV.

In our 2021 Proposed Rule, we also described the State's proposed trading mechanism in the 2018 PM<sub>2.5</sub> Plan for transportation conformity analyses that would allow future decreases in NO<sub>x</sub> emissions from on-road mobile sources to offset any on-road increases in direct PM<sub>2.5</sub> emissions.

We presented our evaluation of the State's Serious area budgets for the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV and proposed to approve the 2025 budgets. We noted our preliminary review of the budgets submitted for adequacy, which preceded our proposed approval of the budgets, consistent with the EPA's general process. Based on information in the Plan, we proposed that budgets were not required for SO<sub>2</sub>, VOC, and ammonia.

Based on our proposed approval of the State's RFP and attainment demonstrations, and our review of the budgets in the Plan, we proposed that the 2025 budgets for RFP and attainment were consistent with those demonstrations, were clearly identified and precisely quantified, and met all other applicable statutory and regulatory requirements including the adequacy criteria in 40 CFR 93.118(e)(4) and (5). We provided a more detailed discussion of the budgets in section VI of the EPA's 2012 Annual PM<sub>2.5</sub> TSD. We noted that our proposed approval of the budgets for the 2012 annual PM<sub>2.5</sub> NAAQS did not affect the status of the previously approved budgets for the 1997 PM<sub>2.5</sub> NAAQS and related trading mechanism, which remain in effect for that PM<sub>2.5</sub> NAAQS, nor the 2006 24-hour PM<sub>2.5</sub> NAAQS and related trading mechanism, which remain in effect for that PM<sub>2.5</sub> NAAQS.<sup>249</sup>

Based on our review of the State's trading mechanism for transportation conformity analyses for the 2012 annual PM<sub>2.5</sub> NAAQS, the EPA previously proposed to approve the trading mechanism, which would allow future decreases in NO<sub>x</sub> emissions from on-road mobile sources to offset any on-

road increases in PM<sub>2.5</sub>, using a 6.5:1 NO<sub>x</sub>:PM<sub>2.5</sub> ratio.<sup>250</sup> To ensure that the trading mechanism does not affect the ability to meet the NO<sub>x</sub> budget, we noted the following: (1) the Plan provides that the NO<sub>x</sub> emission reductions available to supplement the PM<sub>2.5</sub> budget would only be those remaining after the NO<sub>x</sub> budget has been met; (2) the SJV MPOs would have to document clearly the calculations used in the trading when demonstrating conformity, along with any additional reductions of NO<sub>x</sub> and PM<sub>2.5</sub> emissions in the conformity analysis; and (3) the trading calculations must be performed prior to the final rounding to demonstrate conformity with the budgets. We summarized the technical bases for our proposed approval of the trading mechanism in the 2021 Proposed Rule and in section VI of the EPA's 2012 Annual PM<sub>2.5</sub> TSD.

Regarding the duration of budgets for the 2012 annual PM<sub>2.5</sub> NAAQS, the EPA noted that 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. While CARB had requested in its letter submitting the 2018 PM<sub>2.5</sub> Plan that the EPA limit the duration of the budgets (*i.e.*, to allow an adequacy finding, rather than approval, of future SIP revision of budgets to replace the initial budgets),<sup>251</sup> CARB later clarified that since they have submitted EMFAC2021 for EPA review, they no longer request that we limit the duration of our approval.<sup>252</sup>

Lastly, in our 2021 Proposed Rule, the EPA proposed to disapprove the contingency measure element of the 2018 PM<sub>2.5</sub> Plan with respect to the Serious area requirements for the 2012 annual PM<sub>2.5</sub> NAAQS, and we are not modifying our proposed action on contingency measures in this proposed rule. Accordingly, we noted that if the EPA were to finalize the proposed disapproval of the 2012 annual PM<sub>2.5</sub> NAAQS Serious area contingency

measure element, the area would be eligible for a protective finding under the transportation conformity rule because the 2018 PM<sub>2.5</sub> Plan reflects adopted control measures that fully satisfy the emissions reductions requirements for the RFP and attainment year of 2025.<sup>253</sup>

## 2. The EPA's Reconsidered Proposal

Based on the EPA's reconsideration and proposed disapprovals of the attainment and RFP demonstrations discussed herein, we have reconsidered our proposed approval of the Serious area budgets for the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV. As discussed below, the EPA now proposes to disapprove the 2025 RFP and attainment year budgets.

As noted in section I.B of this proposed rule, we are not re-proposing any action on the Plan's precursor demonstrations for SO<sub>x</sub> and VOC (*i.e.*, we retain our proposed approval that SO<sub>x</sub> and VOC are not plan precursors for the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV, and therefore SO<sub>2</sub> and VOC budgets would not be required, consistent with the transportation conformity regulation (40 CFR 93.102(b)(2)(v))). However, as discussed in section II.A.3 of this proposed rule, the EPA now proposes to disapprove the State's precursor demonstration that ammonia does not significantly contribute to exceedances of the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV, and therefore the Plan's precursor demonstration would not address the State's obligation to consider whether ammonia budgets are necessary in the Serious area plan.

In the Plan, the State provides a discussion of the significance/ insignificance factors for motor vehicle emissions of ammonia (and SO<sub>2</sub> and VOC), which would demonstrate a finding of insignificance under the transportation conformity rule.<sup>254</sup> The factors typically addressed for significance include an examination of the on-road contribution of ammonia to the total emissions, and the likelihood of future motor vehicle emission controls. We note that annual average ammonia emissions from on-road mobile sources are an estimated 3.4 tpd of a total of 324.3 tpd from all sources in 2025, or about 1% of the total ammonia emissions.<sup>255</sup> Based on our

<sup>249</sup> 76 FR 69896, 69923–69924 (November 9, 2011) (final rule approving direct PM<sub>2.5</sub> and NO<sub>x</sub> budgets for 2012 and 2014 for the 1997 annual and 24-hour PM<sub>2.5</sub> NAAQS); and 85 FR 44192, 44204 (final rule approving direct PM<sub>2.5</sub> and NO<sub>x</sub> budgets for 2020, 2023, and 2024 for the 2006 24-hour PM<sub>2.5</sub> NAAQS); and 86 FR 53150, 53176–53179 (September 24, 2021) (proposed rule to approve budgets from the 2018 PM<sub>2.5</sub> Plan for direct PM<sub>2.5</sub> and NO<sub>x</sub> for 2017 and 2020 for the 1997 24-hour PM<sub>2.5</sub> NAAQS). We note that, following our 2021 Proposed Rule on the 2012 annual PM<sub>2.5</sub> NAAQS portion of the Plan, the EPA finalized approval of the 2017 and 2020 budgets for the 1997 24-hour PM<sub>2.5</sub> NAAQS portion of the Plan. 87 FR 4503.

<sup>250</sup> For example, a 1 tpd excess of direct PM<sub>2.5</sub> emissions from on-road mobile sources in 2025 could be offset by a 6.5 tpd reduction in NO<sub>x</sub> emissions below the NO<sub>x</sub> budget for on-road mobile sources in 2025.

<sup>251</sup> Letter dated May 9, 2019, from Richard W. Corey, Executive Officer, CARB, to Mike Stoker, Regional Administrator, EPA Region IX, 3.

<sup>252</sup> Email dated November 30, 2021, from Nesamani Kalandiyur, Manager, Transportation Analysis Section, Sustainable Transportation and Communities Division, CARB, to Karina O'Connor, EPA Region IX.

<sup>253</sup> 40 CFR 93.120(a)(3).

<sup>254</sup> For the criteria and procedures for demonstrating a finding of insignificance under the transportation conformity rule, see 40 CFR 93.109(f).

<sup>255</sup> 2018 PM<sub>2.5</sub> Plan, App. B, Table B–5.

review, and the small contribution of ammonia emissions from on-road mobile sources, the EPA agrees with the State's finding that on-road mobile source emissions of ammonia are insignificant and therefore the State is not required to include budgets for ammonia in its Serious area plan for the 2012 annual PM<sub>2.5</sub> NAAQS in the SJV.

With respect to the 2025 RFP and attainment year, the EPA proposes to disapprove the direct PM<sub>2.5</sub> and NO<sub>x</sub> budgets for 2025, as follows. While the 2025 budgets for RFP and attainment were clearly identified and precisely quantified, in this proposed rule the EPA proposes to disapprove the State's Serious area RFP and attainment demonstrations for the 2012 annual PM<sub>2.5</sub> NAAQS.<sup>256</sup> The EPA cannot approve budgets where the underlying CAA requirements (*i.e.*, RFP and attainment) are disapproved and therefore proposes to disapprove the 2025 budgets. The budgets, when considered together with all other emission sources, cannot be consistent with the applicable requirements for RFP and attainment of the 2012 annual PM<sub>2.5</sub> NAAQS given the proposed disapprovals of the RFP and attainment demonstrations. Therefore, we are proposing to disapprove the motor vehicle emissions budgets because they do not meet applicable statutory and regulatory requirements, including the adequacy criteria specified in the transportation conformity rule.<sup>257</sup> If the EPA finalizes the disapproval, the EPA would concurrently withdraw the adequacy finding for the 2025 RFP and attainment year motor vehicle emission budgets.<sup>258</sup>

Lastly, given that we now propose to disapprove the Plan's RFP and attainment demonstrations for the 2012 annual PM<sub>2.5</sub> NAAQS, rather than just the Serious area contingency measure element alone (as described in our 2021 Proposed Rule), the SJV would not be eligible for a protective finding under the transportation conformity rule because the 2018 PM<sub>2.5</sub> Plan's control measures do not fully satisfy the emissions reductions requirements for the RFP and attainment year of 2025.<sup>259</sup>

As a result, if the EPA finalizes our proposed disapproval of the budgets, upon the effective date of our final rule the area would be subject to a conformity freeze under 40 CFR 93.120 of the transportation conformity rule.

No new transportation plan, TIP, or project may be found to conform until the State submits another control strategy implementation plan revision fulfilling the same CAA requirements, the EPA finds the budgets in the revised plan adequate or approves the budgets, the MPO makes a conformity determination for the new budgets, and the U.S. Department of Transportation makes a conformity determination.<sup>260</sup> In addition, only transportation projects outside of the first four years of the current conforming transportation plan and TIP or that meet the requirements of 40 CFR 93.104(f) during the resulting conformity freeze may be found to conform until California submits a new attainment and RFP plan for the 2012 annual PM<sub>2.5</sub> NAAQS and (1) the EPA finds the submitted budgets adequate per 40 CFR 93.118 or (2) the EPA approves the new attainment plan and conformity to the new plan is determined.<sup>261</sup> Furthermore, if, as a result of our final disapproval action, the EPA imposes highway sanctions under section 179(b)(1) of the Act two years from the effective date of our final rule, then the conformity status of the transportation plan and TIP will lapse on that date and no new transportation plan, TIP, or project may be found to conform until California submits a new plan for the 2012 annual PM<sub>2.5</sub> NAAQS, and conformity to the plan is determined.<sup>262</sup>

### III. Environmental Justice Considerations

Executive Order 12898 (59 FR 7629, February 16, 1994) requires that Federal agencies, to the greatest extent practicable and permitted by law, identify and address disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations. Additionally, Executive Order 13985 (86 FR 7009, January 25, 2021) directs Federal Government agencies to assess whether, and to what extent, their programs and policies perpetuate systemic barriers to opportunities and benefits for people of color and other underserved groups, and Executive Order 14008 (86 FR 7619, February 1, 2021) directs Federal agencies to develop programs, policies, and activities to address the disproportionate health, environmental, economic, and climate impacts on disadvantaged communities.

To identify environmental burdens and susceptible populations in

underserved communities in the SJV nonattainment area and to better understand the context of our proposed action on the 2012 annual PM<sub>2.5</sub> NAAQS portion of the SJV PM<sub>2.5</sub> Plan on these communities, we conducted a screening-level analysis using the EPA's environmental justice (EJ) screening and mapping tool ("EJSCREEN").<sup>263</sup> Our screening-level analysis indicates that all eight counties in the SJV score above the national average for the EJSCREEN "Demographic Index" (*i.e.*, ranging from 48% in Stanislaus County to 61% in Tulare County, compared to 36% nationally).<sup>264</sup> The Demographic Index is the average of an area's percent minority and percent low income populations, *i.e.*, the two populations explicitly named in Executive Order 12898.<sup>265</sup> All eight counties also score above the national average for demographic indices of "linguistically isolated population" and "population with less than high school education."

With respect to pollution, all eight counties score at or above the 97th percentile nationally for the PM<sub>2.5</sub> index and seven of the eight counties in the SJV score at or above the 90th percentile nationally for the PM<sub>2.5</sub> EJ index, which is a combination of the Demographic Index and the PM<sub>2.5</sub> index. Most counties also scored above the 80th percentile for each of 11 additional EJ indices included in the EPA's EJSCREEN analysis. In addition, several

<sup>263</sup> EJSCREEN provides a nationally consistent dataset and approach for combining environmental and demographic indicators. EJSCREEN is available at <https://www.epa.gov/ejscreen/what-ejscreen>. The EPA used EJSCREEN to obtain environmental and demographic indicators representing each of the eight counties in the San Joaquin Valley. We note that the indicators for Kern County are for the entire county. While the indicators might have slightly different numbers for the SJV portion of the county, most of the county's population is in the SJV portion, and thus the differences would be small. These indicators are included in EJSCREEN reports that are available in the rulemaking docket for this action.

<sup>264</sup> EPA Region IX, "EJSCREEN Analysis for the Eight Counties of the San Joaquin Valley Nonattainment Area," August 2022.

<sup>265</sup> EJSCREEN reports environmental indicators (*e.g.*, air toxics cancer risk, Pb paint exposure, and traffic proximity and volume) and demographic indicators (*e.g.*, people of color, low income, and linguistically isolated populations). The score for a particular indicator measures how the community of interest compares with the State, the EPA region, or the national average. For example, if a given location is at the 95th percentile nationwide, this means that only 5% of the US population has a higher value than the average person in the location being analyzed. EJSCREEN also reports EJ indexes, which are combinations of a single environmental indicator with the EJSCREEN Demographic Index. For additional information about environmental and demographic indicators and EJ indexes reported by EJSCREEN, see EPA, "EJSCREEN Environmental Justice Mapping and Screening Tool—EJSCREEN Technical Documentation," section 2 (September 2019).

<sup>256</sup> See 40 CFR 93.118(e)(4)(iii).

<sup>257</sup> 40 CFR 93.118(e)(4).

<sup>258</sup> The EPA found the 2025 budgets adequate in our 2021 Proposed Rule. See also, the EPA's 2012 Annual PM<sub>2.5</sub> TSD, 41.

<sup>259</sup> 40 CFR 93.120(a)(3).

<sup>260</sup> 40 CFR 93.120(a)(2).

<sup>261</sup> Id.

<sup>262</sup> 40 CFR 93.120(a)(1).

counties scored above the 90th percentile for certain EJ indices, including, for example, the Ozone EJ Index (Fresno, Kern, Madera, Merced, and Tulare counties), the National Air Toxics Assessment (NATA) Respiratory Hazard EJ Index (Madera and Tulare counties), and the Wastewater Discharge Indicator EJ Index (Merced, San Joaquin, Stanislaus, and Tulare counties).<sup>266</sup>

As discussed in the EPA's EJ technical guidance, people of color and low-income populations, such as those in the SJV, often experience greater exposure and disease burdens than the general population, which can increase their susceptibility to adverse health effects from environmental stressors.<sup>267</sup> Underserved communities may have a compromised ability to cope with or recover from such exposures due to a range of physical, chemical, biological, social, and cultural factors.<sup>268</sup> The EPA is committed to environmental justice for all people, and we acknowledge that the SJV nonattainment area includes minority and low income populations that are subject to higher levels of PM<sub>2.5</sub> and other pollution relative to State and national averages, and that such concerns could be affected by this action.

If the EPA were to finalize the proposed disapprovals described in section II of this proposed rule, California would be required to submit a plan revision for the SJV for the 2012 annual PM<sub>2.5</sub> NAAQS to address the identified deficiencies. In addition, as summarized in section V of this proposed rule, such final action would trigger clocks for the SJV for offset sanctions 18 months after the final rule effective date, highway funding sanctions six months after the offset sanctions, and the obligation for the EPA to promulgate a Federal implementation plan (FIP) within two years of the final rule effective date. These obligations ensure that the identified deficiencies are resolved in an expeditious manner, consistent with the principles of environmental justice.

We note that, in developing and proposing draft regulations for governing board consideration, both CARB and the District consider the potential benefits of proposed measures for reducing health hazards to disadvantaged communities, such as diesel PM exposure near Heavy-Duty

truck corridors and indoor smoke exposure from residential wood burning. There may be further opportunities to address EJ concerns through such control development and implementation.

More broadly, California law has established additional requirements for community-focused action to reduce air pollution in the State. For example, in response to California Assembly Bill 617 (2017), CARB and the District have engaged communities in the SJV, performed technical evaluations, and ultimately selected four communities (South Central Fresno, Shafter, Stockton, and Arvin/Lamont) that are in varying stages of developing and implementing community air monitoring programs and community emission reduction programs.<sup>269</sup> Furthermore, grant programs implemented by the local, State, and Federal authorities may serve to smooth and accelerate emission reductions of PM<sub>2.5</sub> and its precursor pollutants in the SJV, thereby relieving some of the cumulative burden on disadvantaged communities in the SJV nonattainment area.<sup>270</sup>

#### IV. Title VI of the Civil Rights Act

As noted in section I.C of this proposed rule, the EPA received a comment letter dated January 28, 2022 (the Public Justice Comment Letter), on the 2021 Proposed Rule from a coalition of 13 organizations.

The commenters urge the EPA to disapprove the Serious area plan "because EPA has failed to require CARB/SJV to provide necessary assurances that the State implementation plan complies with Title VI of the Civil Rights Act of 1964. The on-going environmental justice and air pollution crisis demand EPA reverse course and disapprove the 2012 plan."<sup>271</sup> To support this argument, the commenters provide information regarding the racial demographics of the SJV, the potential for disparate impacts

from exposure to PM<sub>2.5</sub>, and specific aspects of the SJV PM<sub>2.5</sub> Plan that the commenters believe result in disparate impacts. The commenters point to past precedent in which the EPA has considered compliance with Title VI of the Civil Rights Act (Title VI) in the SIP context through CAA section 110(a)(2)(E). The commenters also note that thus far California has provided no "demonstration" that the Serious area plan does not cause or exacerbate disparate impacts on affected communities in the SJV. Thus, the commenters assert that the EPA must disapprove the Serious area plan because the State did not provide "required assurances" of compliance with Title VI.

At this time, the EPA has not issued any guidance or regulations concerning what might be required for purposes of CAA section 110(a)(2)(E) as it regards Title VI. The EPA has addressed other aspects of section 110(a)(2)(E) in the context of infrastructure SIP submissions in its September 2013 "Guidance on Infrastructure State Implementation Plan (SIP) Elements under Clean Air Act Sections 110(a)(1) and 110(a)(2)." Similarly, EPA regulations only address other aspects of section 110(a)(2)(E) in 40 CFR Sections 51.230–232.

#### A. Background on CAA Section 110(a)(2)(E)

For purposes of background, section 110(a)(2)(E) of the CAA, in relevant part and with emphasis added, reads as follows:

(2) Each implementation plan submitted by a State under this chapter shall be adopted by the State after reasonable notice and public hearing. Each such plan shall— . . .

(E) provide (i) *necessary assurances* that the State (or, except where the Administrator deems inappropriate, the general purpose local government or governments, or a regional agency designated by the State or general purpose local governments for such purpose) will have adequate personnel, funding, and authority under State (and, as appropriate, local) law to carry out such implementation plan (*and is not prohibited by any provision of Federal or State law from carrying out such implementation plan or portion thereof*), (ii) requirements that the State comply with the requirements respecting State boards under section 7428 of this title, and (iii) necessary assurances that, where the State has relied on a local or regional government, agency, or instrumentality for the implementation of any plan provision, the State has responsibility for ensuring adequate implementation of such plan provision.<sup>272</sup>

<sup>272</sup> 42 U.S.C. Section 7410(a)(2)(E) (emphasis added).

<sup>266</sup> Notably, Tulare County scores above the 90th percentile on six of the 12 EJ indices in the EPA's EJSCREEN analysis, including the PM<sub>2.5</sub> EJ Index, which is the highest count among all SJV counties.

<sup>267</sup> EPA, "Technical Guidance for Assessing Environmental Justice in Regulatory Analysis," section 4 (June 2016).

<sup>268</sup> *Id.* at section 4.1.

<sup>269</sup> For further information, see, e.g., SJVUAPCD, "Item Number 9: Receive Progress Reports on AB617 Community Emission Reduction Program Implementation," November 18, 2021.

<sup>270</sup> For example, through the EPA's Targeted Airshed Grant program, the District has competed for, and the EPA has granted 13 awards to the District from 2015 through 2021, totaling \$77.4 million, to replace older, dirtier woodstoves, agricultural equipment, heavy-duty trucks and yard trucks, and agricultural nut harvesters with cleaner equipment. A list of the Targeted Airshed Grants the EPA awarded in fiscal years 2015–2020 is accessible online at <https://www.epa.gov/air-quality-implementation-plans/targeted-airshed-grant-recipients>. These EPA grants support projects to reduce emissions in areas facing the highest levels of ground-level ozone and PM<sub>2.5</sub>.

<sup>271</sup> Public Justice Comment Letter, 2.

The EPA has previously addressed CAA section 110(a)(2)(E)(i), Title VI, and necessary assurances in a 2012 action on a nonattainment plan SIP submission from California for purposes of the ozone NAAQS.<sup>273</sup> Comments submitted on the EPA's April 24, 2012 proposed action contended that the SIP submission was not in compliance with CAA section 110(a)(2)(E) because of alleged violations of Title VI related to the regulation of pesticides as precursors to ozone (as volatile organic compounds). To evaluate the commenter's concerns, the EPA sought additional necessary assurances from the State concerning its regulation of pesticides. California submitted additional information to the EPA concerning the State's activities that were part of the resolution of a Title VI complaint, and additional information concerning the State's regulation of pesticides. California submitted this information to provide "necessary assurances" to the EPA that implementation of the requirements of the SIP submission would not violate Title VI. The EPA accepted this information as providing adequate necessary assurances for purposes of section 110(a)(2)(E) and did not require the State to make any substantive changes to support approval of the SIP revision.

Commenters in the 2012 action asserted that California had not provided sufficient necessary assurances. In the response to comments in the 2012 action, the EPA explained that "Section 110(a)(2)(E), however, does not require a State to 'demonstrate' it is not prohibited by Federal or State law from implementing its proposed SIP revision. Rather, this section requires a State to provide 'necessary assurances' of this."<sup>274</sup> The EPA further explained,

Courts have given EPA ample discretion in deciding what assurances are "necessary" and have held that a general assurance or certification is sufficient. ("EPA is entitled to rely on a state's certification unless it is clear that the SIP violates state law and proof thereof \* \* \* is presented to EPA." *BCCA Appeal Group v. EPA*, 355 F.3d 817, 830 fn 11 (5th Cir. 2003)).<sup>275</sup>

The EPA received a petition for review (from groups overlapping with the groups that sent the Public Justice Comment Letter) of the EPA's October 26, 2012 final action which was reviewed and ultimately decided in EPA's favor by the Ninth Circuit Court

of Appeals.<sup>276</sup> The Court used an arbitrary and capricious standard of review to evaluate the EPA's conclusion that the State had provided adequate "necessary assurances" that implementation of the SIP is not prohibited by Federal law—specifically, Title VI of the Federal Civil Rights Act of 1964—per the language of section 110(a)(2)(E). The Ninth Circuit found that the EPA fulfilled its duty to provide a reasoned judgment because its determination was cogently explained and supported by the record. In dismissing the petition, the Court explained that "[t]he EPA has a duty to provide a reasoned judgment as to whether the State has provided 'necessary assurances,' but what assurances are 'necessary' is left to the EPA's discretion."<sup>277</sup>

#### *B. Background on Title VI of the Civil Rights Act of 1964*

For purposes of background context, Title VI prohibits recipients of Federal financial assistance from discriminating on the basis of race, color, or national origin. Under the EPA's nondiscrimination regulations, which implement Title VI and other civil rights laws,<sup>278</sup> recipients of EPA financial assistance are prohibited from taking actions in their programs or activities that are intentionally discriminatory and/or have an unjustified disparate impact.<sup>279</sup> This includes policies, criteria or methods of administering programs that are neutral on their face but have the effect of discriminating.<sup>280</sup> Under the EPA's regulation, recipients of EPA financial assistance are also required to have in place certain procedural safeguards, including grievance procedures that assure the prompt and fair resolution of external discrimination complaints.<sup>281</sup>

The EPA carries out its mandate to ensure that recipients of EPA financial assistance comply with their nondiscrimination obligations by investigating administrative complaints filed with the EPA alleging discrimination prohibited by Title VI and the other civil rights laws;<sup>282</sup> initiating affirmative compliance reviews;<sup>283</sup> and providing technical assistance to recipients to assist them in meeting their Title VI obligations. In the current matter being addressed in this

action, no Title VI complaint was filed regarding CARB or the District.<sup>284</sup> Also, the EPA (through the External Civil Rights Compliance Office or ECRCO) has not initiated and is not currently conducting a compliance review of either CARB or SJVUAPCD.

#### *C. Comments Received on 2021 Proposed Rule*

The commenters raise the issue of compliance with section 110(a)(2)(E) with respect to Title VI. The commenters contend that the SIP submission for the SJV is not in compliance with CAA section 110(a)(2)(E) because California has not provided necessary assurances to ensure that implementation of the SIP is in compliance with Title VI. The commenters did not submit these specific comments to CARB or the SJVUAPCD during the State's development and adoption process of the proposed SIP revisions that are currently at issue. The commenters are not required to have done so to raise this issue with the EPA now, but as a result, the SIP submission to the EPA does not include any CARB or District response concerning this specific issue. In addition, the SIP submission does not include specifically identified necessary assurances per section 110(a)(2)(E) provided by the State.

At the outset, the EPA acknowledges the statements in the comment letter that the SJV area has historically been designated as nonattainment for the PM<sub>2.5</sub> NAAQS and that the SJV area includes higher representation of persons of color compared to the State average. Although in this action the EPA is not proposing to disapprove on the basis of CAA section 110(a)(2)(E), if the EPA disapproves the Serious area plan as proposed today, California would need to submit a revised Serious area plan for the SJV. The EPA expects that any such revision would comply with the requirements of section 110(a)(2)(E) and that CARB and the District will engage with the community through notice and comment during the SIP

<sup>284</sup> The EPA's External Civil Rights Compliance Office (ECRCO) contacted Mr. Brent Newell, signatory to the Public Justice Comment Letter, to see whether the commenters intended to file a Title VI administrative complaint with the EPA. In response, the commenters stated, "[t]he comments submitted were neither intended nor styled as a Title VI complaint. The comments raise significant issues with respect to EPA's proposed approval, including the section 110(a)(2)(E) issues and EPA's authority and duty to enforce Title VI, and we expect EPA to respond to all of the issues in the final action/response to comments." Email exchange dated February 8, 2022, between Brent Newell, Public Justice and Lilian Dorka, Director, External Civil Rights Compliance Office, EPA Office of General Counsel.

<sup>276</sup> *El Comité Para El Bienstar de Earlimart et al. (El Comité) v. EPA*, 786 F.3d 688 (9th Cir. 2015).

<sup>277</sup> 786 F.3d at 700.

<sup>278</sup> 40 CFR part 7 and part 5.

<sup>279</sup> 40 CFR Sections 7.30 and 7.35.

<sup>280</sup> 40 CFR Section 7.35(b).

<sup>281</sup> 40 CFR Section 7.90.

<sup>282</sup> 40 CFR Section 7.120.

<sup>283</sup> 40 CFR Section 7.115.

<sup>273</sup> 77 FR 65294 (October 26, 2012) (final rule); 77 FR 24441 (April 24, 2012) (proposed rule).

<sup>274</sup> 77 FR 65294, 65302, column 2.

<sup>275</sup> *Id.*

development process for its revised Serious area plan prior to submitting a revised SIP to the EPA, and specifically with respect to necessary assurances relative to Title VI. The new SIP development process provides an important opportunity for CARB and the District to identify potential adverse disparate impacts on the basis of race, color, or national origin from its revised Serious area plan for the 2012 annual PM<sub>2.5</sub> NAAQS and address them as appropriate.

The EPA acknowledges that it has not issued national guidance or regulations concerning implementation of section 110(a)(2)(E) as it pertains to consideration of Title VI and disparate impacts on the basis of race, color, or national origin in the context of the SIP program. Such guidance is forthcoming and will address CAA section 110(a)(2)(E)'s necessary assurance requirements as they relate to Title VI. In the interim, CARB and the District may find existing EPA and DOJ Title VI and environmental justice resources useful, even though these documents do not relate specifically to CAA section 110(a)(2)(E).<sup>285</sup> Additionally, the EPA's ECRCO is available to provide technical assistance regarding Title VI compliance to CARB and/or the District as they develop the revised Serious area plan for the 2012 annual PM<sub>2.5</sub> NAAQS.

## V. Summary of Proposed Actions and Request for Public Comment

For the reasons discussed in this proposed rule, under CAA section 110(k)(3), the EPA proposes to disapprove, as a revision to the California SIP, the following portions of the SJV PM<sub>2.5</sub> Plan for the 2012 annual PM<sub>2.5</sub> NAAQS to address the CAA's Serious area planning requirements in the SJV nonattainment area:

(1) the demonstration that BACM, including BACT, for the control of ammonia emission sources and for the control of NO<sub>x</sub> and direct PM<sub>2.5</sub> building heating emission sources will be implemented no later than 4 years after the area was reclassified (CAA section 189(b)(1)(B) and 40 CFR 51.1010(a));

(2) the demonstration that the Plan provides for attainment as expeditiously as practicable but no later than

December 31, 2025 (CAA sections 188(c)(2) and 189(b)(1)(A) and 40 CFR 51.1011(b));

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

(4) quantitative milestones that are to be achieved every three years until the area is redesignated attainment and that demonstrate RFP toward attainment by the applicable attainment date (CAA section 189(c) and 40 CFR 51.1013(a)(2)(i)); and

(5) motor vehicle emissions budgets for 2025 as shown in Table 3 of this proposed rule (CAA section 176(c) and 40 CFR part 93, subpart A).

We are also proposing to disapprove the State's precursor demonstration for ammonia. Our proposed action on the emissions inventory and contingency measure elements remains unchanged from our 2021 Proposed Rule.

If we finalize the proposed disapprovals for BACM, the attainment demonstration, RFP, quantitative milestones, or motor vehicle emission budgets, the offset sanction in CAA section 179(b)(2) would apply in the SJV 18 months after the effective date of a final disapproval, and the highway funding sanctions in CAA section 179(b)(1) would apply in the area six months after the offset sanction is imposed.<sup>286</sup> Neither sanction will be imposed under the CAA if the State submits and we approve, prior to the implementation of the sanctions, a SIP revision that corrects the deficiencies that we identify in our final action. The EPA intends to work with CARB and the SJVUAPCD to correct the deficiencies in a timely manner.

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

Furthermore, if we take final action disapproving the 2012 annual PM<sub>2.5</sub> NAAQS portion of the SJV PM<sub>2.5</sub> Plan, a conformity freeze will take effect upon the effective date of any final disapproval (usually 30 days after publication of the final action in the **Federal Register**). A conformity freeze means that only projects in the first four years of the most recent RTP and TIP can proceed. During a freeze, no new

RTPs, TIPs, or RTP/TIP amendments can be found to conform.<sup>287</sup>

We will accept comments from the public on these proposals for the next 45 days. The deadline and instructions for submission of comments are provided in the **DATES** and **ADDRESSES** sections at the beginning of this proposed rule.

## VI. Statutory and Executive Order Reviews

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

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

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

### B. Paperwork Reduction Act (PRA)

This action does not impose an information collection burden under the PRA, because this proposed SIP 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 SIP 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 disapprove certain 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

<sup>285</sup> See ECRCO's Toolkit Chapter I at: [https://www.epa.gov/sites/default/files/2017-01/documents/toolkit-chapter1-transmittal\\_letter-faqs.pdf](https://www.epa.gov/sites/default/files/2017-01/documents/toolkit-chapter1-transmittal_letter-faqs.pdf), January 18, 2017, and Department of Justice "Title VI Legal Manual (Updated)" at: <https://www.justice.gov/crt/fcs/T6Manual6>. See also, e.g., EPA, "Guidance on Considering Environmental Justice During the Development of Regulatory Actions," (May 2015), and EPA, "Technical Guidance for Assessing Environmental Justice in Regulatory Analysis," (June 2016).

<sup>286</sup> 40 CFR 52.31.

<sup>287</sup> See 40 CFR 93.120(a).

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 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 SIP 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*

Executive Order 12898 (59 FR 7629 (February 16, 1994)) establishes Federal

executive policy on environmental justice. Its main provision directs Federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States. The EPA’s evaluation of this issue is contained in the section of the preamble titled “Environmental Justice Considerations.”

**List of Subjects 40 CFR Part 52**

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

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

Dated: September 28, 2022.

**Martha Guzman Aceves,**

*Regional Administrator, Region IX.*

[FR Doc. 2022–21492 Filed 10–4–22; 8:45 am]

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