

## Staff Report

### Revision to the California State Implementation Plan for PM2.5 Standards in the San Joaquin Valley

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**TABLE OF CONTENTS**

I. Background.....4

II. SIP Revision for the 2012 PM2.5 Plan: Emissions Reductions  
Commitment for Fine Particulate Matter from Residential Wood  
Burning.....5

III. Staff Recommendation .....5

Appendix A: Clarifying Letter to U.S. EPA Regarding Past Commitments

## I. Background

The California Air Resources Board (CARB or Board) and the San Joaquin Valley Air Pollution Control District (District) jointly developed the *2018 Plan for the 1997, 2006, and 2012 PM2.5 Standards* (2018 PM2.5 Plan) to meet federal Clean Air Act (CAA) requirements for multiple fine particulate matter (PM2.5) National Ambient Air Quality Standards (NAAQS or standards). Following District adoption on November 15, 2018, and CARB adoption on January 24, 2019, CARB submitted the 2018 PM2.5 Plan to the United States Environmental Protection Agency (U.S. EPA) on May 10, 2019, as a revision to the California State Implementation Plan (SIP).

One of the four standards addressed in the 2018 PM2.5 Plan is the 2006 24-hour 35 microgram per cubic meter ( $\mu\text{g}/\text{m}^3$ ) standard. On March 27, 2020, U.S. EPA proposed to approve the portions of the 2018 PM2.5 Plan pertaining to the 35  $\mu\text{g}/\text{m}^3$  standard and to grant the request for an attainment date extension under CAA section 188(e) for the same standard (85 FR 17382). To support its approval and the CAA section 188(e) attainment date extension request, U.S. EPA has requested that CARB and the District provide a revision to an emission reductions commitment in the 2012 PM2.5 Plan. The proposed SIP revision which reflects emissions reductions is presented in this Staff Report.

CARB and the District have met and exceeded the emissions reductions commitment contained in the 2012 PM2.5 Plan to achieve 1.9 tons per day (tpd) aggregate reductions of PM2.5 emissions from residential wood combustion. The District amended its residential wood burning devices rule on September 18, 2014, achieving 2.18 tpd of PM2.5 reductions consistent with the emission inventory contained in the 2012 PM2.5 Plan, exceeding the commitment of 1.9 tpd reduction. U.S. EPA approved the rule and associated reductions on October 6, 2016. CARB is now translating this aggregate commitment in the context of the emission inventory contained in the 2018 PM2.5 Plan.

CARB and the District developed the 2012 PM2.5 Plan to address the 24-hour 35  $\mu\text{g}/\text{m}^3$  PM2.5 standard with an attainment date of 2019. As part of the strategy in the 2012 PM2.5 Plan, the District committed to reducing 1.5 tpd of PM2.5 emissions during the winter season, effective as of the 2016/17 winter season, from amending Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters), including lowering curtailment thresholds. The District also committed to achieving 0.4 tpd reduction from amending Rule 4692 (Commercial Charbroiling), with an anticipated compliance date of 2017. Thus, between these two commitments, the District committed to a total 1.9 tpd reduction of wintertime PM2.5 emissions in 2017. This commitment was made in the context of the 2012 PM2.5 Plan, and based on the emissions inventory used to demonstrate attainment in the 2012 PM2.5 Plan. The 2012 PM2.5 Plan was adopted by the District on December 20, 2012, by CARB on January 24, 2013, and approved by U.S. EPA on August 31, 2016 (81 FR 59876).

CARB previously documented in a clarifying letter to U.S. EPA (see Appendix A) that the State has met the emissions reductions commitment in the 2012 PM2.5 Plan. That letter described the updates made as part of CARB's routine emissions inventory improvement process, reflecting data gathered during a District survey of Valley residents' wood burning practices. The updated inventory reflects real decreases in actual emissions going into the air from residential wood burning due to District programs. As a result, 2017 PM2.5 emissions levels in the 2018 PM2.5 Plan reflecting Rule 4901 implementation are lower than what was forecasted for 2017 emissions levels in the 2012 PM2.5 Plan—in fact, emissions remaining are about 1 tpd less than what was originally called for with fulfillment of the 1.9 tpd commitment.

## **II. SIP Revision for the 2012 PM2.5 Plan: Emissions Reductions Commitment for Fine Particulate Matter from Residential Wood Burning**

CARB is now proposing a revised commitment for the 2012 PM2.5 Plan, translating the original 1.9 tpd commitment into an emissions reductions commitment based instead on the emissions inventory developed for and used in the 2018 PM2.5 Plan. The proposed revised commitment reflects emissions reductions from implementation of Rule 4901 only and does not include reductions achieved with incentives. CARB is providing this revision to further support the finding that the State has met its previous commitments. CARB is making this revision under its authority from California Health and Safety Code section 39602 which designates CARB as the responsible agency for preparing SIPs under the CAA. Additionally, this revision is supported by language in CARB Resolution 19-1 adopting the 2018 PM2.5 Plan which directed the Executive Officer to take further necessary actions to support U.S. EPA's approval of the 2018 PM2.5 Plan. CARB has coordinated closely with both the District and U.S. EPA on this proposed SIP revision. The emissions inventory for the 2018 PM2.5 Plan shows that, between 2013 and 2017, due to implementation of Rule 4901, emissions of PM2.5 from wood burning devices decreased by 0.86 tpd on a winter average basis. The reduction of 0.86 tpd does not include any reductions from incentives. As a result the remaining emissions, using the inventory used in the 2018 PM2.5 Plan, are lower than was projected in the 2012 PM2.5 Plan with the commitment. Therefore, CARB is revising the aggregate emissions reductions commitment to 0.86 tpd of PM2.5. This revision replaces the commitment currently codified in 40 CFR 52.220(c)(478)(ii)(A)(3).

## **III. Staff Recommendation**

CARB staff recommends that the Board:

1. Adopt the emissions reductions commitment for PM2.5 from residential wood burning for the 2012 PM2.5 Plan as revisions to the California SIP; and
2. Direct the Executive Officer to submit the revisions to U.S. EPA for approval.

**Appendix A**

February 4, 2020

Ms. Elizabeth Adams, Director  
Region 9, Air and Radiation Division  
U.S. Environmental Protection Agency  
75 Hawthorne Street  
San Francisco, California 94105

Dear Ms. Adams:

With this letter, the California Air Resources Board (CARB) is providing to the U.S. Environmental Protection Agency (U.S. EPA) additional clarifying information describing how the State met its commitment for emissions reductions from wood burning and cooking in the 2012 PM<sub>2.5</sub> Plan for the San Joaquin Valley (Valley). We are providing this information to aid U.S. EPA in approving the Valley 2018 Plan for the 1997, 2006, and 2012 PM<sub>2.5</sub> Standards (2018 PM<sub>2.5</sub> Plan).

The 2018 PM<sub>2.5</sub> Plan includes an attainment date extension request from 2019 to 2024 for the 24-hour 35 microgram per cubic meter ( $\mu\text{g}/\text{m}^3$ ) fine particulate matter (PM<sub>2.5</sub>) national ambient air quality standard (NAAQS or standard), as allowed under Clean Air Act (Act) Section 188(e). The 2018 PM<sub>2.5</sub> Plan demonstrates that the Valley will attain the 24-hour 35  $\mu\text{g}/\text{m}^3$  standard by 2024. U.S. EPA may grant the attainment date extension to 2024 under Act Section 188(e) if, among other requirements, "the State has complied with all requirements and commitments pertaining to that area in the implementation plan."

As stated in the 2018 PM<sub>2.5</sub> Plan and further detailed below, the State has met the emissions reduction commitment from wood burning and cooking included in the 2012 PM<sub>2.5</sub> Plan. The information below shows how the San Joaquin Valley Air Pollution Control District (District) achieved the needed reductions through rulemaking that satisfies Act requirements for State Implementation Plan- (SIP) creditability, including permanence and enforceability. Subsequent to the District achieving the reductions via rule, the emissions inventory has been improved. The information below also shows how the needed reductions continue to be maintained, and how emissions are in fact reduced further, based on the improved inventory data. Indeed, emissions from wood burning are now well below the levels forecasted with the commitment when the 2012 PM<sub>2.5</sub> Plan was approved.

### **Commitment met with Rule 4901**

The District developed the 2012 PM2.5 Plan ([www.valleyair.org/Air\\_Quality\\_Plans/PM25Plans2012.htm](http://www.valleyair.org/Air_Quality_Plans/PM25Plans2012.htm)) to address the 24-hour 35 µg/m<sup>3</sup> standard with an attainment date of 2019. As part of the strategy in the 2012 PM2.5 Plan, the District committed to reducing 1.5 tons per day (tpd) of PM2.5 emissions during the winter season, effective as of the 2016/17 winter season, from amending Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters) (2012 PM2.5 Plan, page 5-22). The District also committed to achieving 0.4 tpd reduction from amending Rule 4692 (Commercial Charbroiling), with an anticipated compliance date of 2017 (2012 PM2.5 Plan, page 5-22). Thus, between these two commitments, the District committed to a total 1.9 tpd reduction of wintertime PM2.5 emissions in 2017. This commitment was made in the context of the 2012 PM2.5 Plan, and based on the emissions inventory used to demonstrate attainment in the 2012 PM2.5 Plan. The 2012 PM2.5 Plan was adopted by the District on December 20, 2012, by CARB on January 24, 2013, and approved by U.S. EPA on August 31, 2016 (81 FR 59876).

The District amended Rule 4901 on September 18, 2014, two years earlier than the deadline committed to in the 2012 PM2.5 Plan (2012 PM2.5 Plan, page 5-22). The "Final Draft Staff Report with Appendices for Proposed Amendments to Residential Wood Burning Program" (2014 Staff Report) documented that the District met and exceeded the 2012 PM2.5 Plan commitment (page B-3, [http://www.valleyair.org/Board\\_meetings/GB/agenda\\_minutes/Agenda/2014/September/final/07.pdf](http://www.valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2014/September/final/07.pdf)). The 2014 Staff Report indicated that the amendments would achieve a reduction of 3.27 tpd from implementation of Rule 4901 requirements. Because the 2012 PM2.5 Plan commitment is over the entire winter season (November through April) as opposed to the wood burning season (November through February), the 2014 Staff Report includes a conversion, as follows: "Since the winter season is 180 days and the wood burning season is 120 days, the 3.27 tpd of wood burning season emission reductions equates to 2.18 tpd when averaged over the entire winter season" (page B-3). Thus, Rule 4901 achieves 2.18 tpd reduction of wintertime PM2.5 emissions in 2017, exceeding the District's 2012 PM2.5 Plan commitment of 1.9 tpd reduction, as demonstrated in the 2014 Staff Report.

The District transmitted the adopted Rule package to CARB, and CARB submitted it to U.S. EPA on November 6, 2014, as a revision to the SIP. U.S. EPA proposed approval of the amended Rule on September 30, 2015 (80 FR 58637), and finalized approval on October 6, 2016 (81 FR 69393). In its final action, U.S. EPA recognized that the emissions reductions achieved by the Rule exceeded the 2012 PM2.5 Plan commitment, noting that the 2014 Rule amendment "yield[ed] an overall estimated emission reduction of 3.27 tpd PM2.5 when compared to the SIP-approved rule," and that U.S. EPA's "evaluation does not rely on expected additional change-outs to

cleaner burning devices, which would lead to additional emission reductions beyond 3.27 tpd PM2.5" (81 FR 69393-69394). U.S. EPA concluded that "the revisions to Rule 4901 are consistent with the development of an overall plan for attaining the NAAQS in the [Valley]" (81 FR 69394).

### **2018 PM2.5 Plan inventory shows commitment exceeded**

After completing the 2012 PM2.5 Plan, the District and CARB embarked on an emissions inventory update, including for the residential fuel combustion category. Updates to the emissions inventory are a routine part of the District and CARB's work. While inventories reflect the best information available at the time, new information and better data continually become available, and in fact are actively sought out by the District and CARB, and are subsequently incorporated into the emissions inventory as expediently as possible. Because SIPs must include an up-to-date emissions inventory, this work is often done as part of the process of developing a SIP. The District conducted a survey in 2014 to gather data on residential wood burning devices in the Valley. The two main outcomes of the survey were changes in fuel usage and wood stoves population estimates, as documented in the District's "2015 Area Source Emissions Inventory Methodology 610-Residential Wood Combustion" (2015 Methodology, [ww3.arb.ca.gov/ei/areasrc/districtmeth/sjvalley/sjvrwc2016\\_oct18.pdf](http://ww3.arb.ca.gov/ei/areasrc/districtmeth/sjvalley/sjvrwc2016_oct18.pdf)).

First, the survey information "provided additional data points that were used to refine the fuel usage rates for several types of wood burning devices" (2015 Methodology, page 22). Second, "[i]nformation gathered through the [District's Burn Cleaner wood stove change-out program] was used to further refine the population of wood burning devices in the [District]. Open hearth and wood stoves replaced by the program were removed from their respective estimated populations and replaced by newer, [cleaner] units. These [replacement] units have lower emission factors associated with them, resulting in additional reductions in emissions" (2015 Methodology, page 22). Using the refinements from the 2014 survey, "estimated emissions from residential wood combustion were lowered throughout each of the eight counties in the [District]," (2015 Methodology, page 22) resulting in an updated emissions inventory which was used in the 2018 PM2.5 Plan. The reductions shown in the 2018 PM2.5 Plan inventory reflect the District's efforts to cut wood use and replace dirty stoves and open hearths, including education on the health impacts of residential wood burning. These are real decreases in actual emissions going into the air from residential wood burning due to implementation of Rule 4901 and the Burn Cleaner program.

Comparing the most up-to-date estimate of 2017 emissions (the year the reductions were to be achieved) in the 2018 PM2.5 Plan inventory to 2017 emissions in the original inventory from the 2012 PM2.5 Plan shows that the commitment has been

Ms. Elizabeth Adams  
February 4, 2020  
Page 4

exceeded. To walk through the numbers: projected baseline 2017 emissions from residential wood burning devices in the 2012 PM2.5 Plan were 8.35 tpd (2012 PM2.5 Plan, page D-119). Meeting the commitment for a 1.9 tpd reduction would result in remaining 2017 emissions of 6.45 tpd. The inventory in the 2018 PM2.5 Plan shows emissions of 5.49 tpd remaining in 2017 (2018 PM2.5 Plan, page C-257). Comparing these two estimates for 2017 emissions shows that with the most up-to-date inventory, current emissions are 0.96 tpd less than was forecasted to be achieved with the 1.9 tpd emissions reductions commitment in the 2012 PM2.5 Plan. To be specific, 2017 PM2.5 emissions levels in the 2018 PM2.5 Plan reflecting Rule 4901 implementation are lower than what was forecasted for 2017 emissions levels in the 2012 PM2.5 Plan.

### Summary

In summary, the information we are providing in this letter shows that a commitment of 1.9 tpd of reductions from wood burning and cooking was met by the 2014 amendments to Rule 4901. Emissions reductions calculated, and subsequently approved by U.S. EPA, for the 2014 amendments to Rule 4901 were 2.18 tpd, which is 0.3 tpd in excess of the 1.9 tpd minimum required. As a confirmation, using the most recent and up-to-date emissions inventory data in the 2018 PM2.5 Plan, the emissions in 2017 for wood burning are 1 tpd below what was originally called for with fulfillment of the 1.9 tpd commitment, showing that the commitment continues to be met.

CARB is committed to working with U.S. EPA staff to provide any additional clarifying information needed. These "excess" reductions are to the benefit of Valley air quality. Thank you for your work to review and approve the Valley 2018 PM2.5 Plan. CARB and the District are committed to continuing to work with U.S. EPA to secure SIP approval and to implement the 2018 PM2.5 Plan. If you have any questions, please contact me at (916) 322-2739, or have your staff contact Dr. Michael Benjamin, Chief, Air Quality Planning and Science Division, at (916) 201-8968.

Sincerely,



Kurt Karperos  
Deputy Executive Officer

cc: See next page.

Ms. Elizabeth Adams  
February 4, 2020  
Page 5

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Dr. Michael T. Benjamin, Chief  
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