

March 19, 2024

Martha Guzman
Regional Administrator
U.S. Environmental Protection Agency, Region 9
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San Francisco, California 94105
guzman.martha@epa.gov

Dear Administrator Guzman:

The California Air Resources Board is submitting to the U.S. Environmental Protection Agency the San Joaquin Valley Air Pollution Control District *2023 Quantitative Milestone Report: 1997 and 2006 PM_{2.5} National Ambient Air Quality Standards*. This 2023 Milestone Report addresses the Clean Air Act requirements for reporting on quantitative milestones for a Serious nonattainment area for the 15 µg/m³ and 35 µg/m³ PM_{2.5} national ambient air quality standards for the San Joaquin Valley.

On May 10, 2019, the California Air Resources Board submitted the *2018 Plan for the 1997, 2006, and 2012 PM_{2.5} Standards* for the San Joaquin Valley to the U.S. Environmental Protection Agency for inclusion in the California State Implementation Plan. This plan addressed the Clean Air Act requirements for the 15 µg/m³ and 35 µg/m³ PM_{2.5} standards, including reasonable further progress emissions targets and quantitative milestones for the reasonable further progress milestone year of 2023. The Clean Air Act requires PM_{2.5} nonattainment areas to submit a quantitative milestone report within 90 days of each reasonable further progress milestone year—in this instance for the 2023 milestone, by March 31, 2024.

The 2023 Milestone Report uses the most up to date emissions inventory currently used in the San Joaquin Valley Serious PM_{2.5} State Implementation Plan that will be transmitted to the U.S. Environmental Protection Agency later this year. In addition, the 2023 Milestone Report includes actual agricultural burning emissions that occurred in 2023. In 2023, the San Joaquin Valley Air Pollution Control District authorized a total of 122,412 tons of agricultural burning, as discussed in an update provided to their Governing Board on January 18, 2024.^[1] Using the emission factors for each crop, the agricultural burning category was updated to reflect 1.19 tons per day of actual agricultural burning emissions on an annual average.

The enclosed 2023 Milestone Report documents implementation of California Air Resources Board and San Joaquin Valley Air Pollution Control District rules that provided the emission

^[1] SJVAPCD Governing Board Meeting, January 18, 2023. Presentation available at https://ww2.valleyair.org/media/uvzbahcu/item-8_-update-on-agburn-alt.pdf, accessed 2/13/2024.

reductions needed from the beginning of 2021 through 2023 to meet the 2023 reasonable further progress emissions targets. The 2023 Milestone Report also demonstrates that the 2023 quantitative milestones have been met.

The California Air Resources Board is committed to working with the U.S. Environmental Protection Agency staff to provide any additional clarifying information needed. If you have any questions, please contact Ms. Edie Chang, Deputy Executive Officer, at (916) 445 4383, or have your staff contact Dr. Michael Benjamin, Chief of the Air Quality Planning and Science Division, at (916) 201 8968.

Sincerely,



Steven S. Cliff, Ph.D., Executive Officer

Enclosure

cc: Matt Lakin, Director, Air and Radiation Division, U.S. Environmental Protection Agency, Region 9
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San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

2023 Quantitative Milestone Report

1997 and 2006 PM_{2.5} National Ambient Air Quality Standards

February 5, 2024



2023 QUANTITATIVE MILESTONE REPORT FOR THE 1997 AND 2006 PM2.5 NAAQS

Consistent with Clean Air Act (CAA) Section 189(c)(1), in each attainment plan for a fine particulate matter (PM_{2.5}) nonattainment area, the state must submit specific quantitative milestones that demonstrate Reasonable Further Progress (RFP) toward attainment of the applicable PM_{2.5} National Ambient Air Quality Standards (NAAQS, or standards). A quantitative milestone report must be submitted following each quantitative milestone period. This *2023 Quantitative Milestone Report* addresses the federal annual PM_{2.5} standard of 15 µg/m³, established in 1997 and the federal 24-hour PM_{2.5} standard of 35 µg/m³, established in 2006. The Valley was reclassified as Serious nonattainment for the 1997 PM_{2.5} standard effective May 7, 2015, and the Valley was reclassified as Serious nonattainment for the 2006 PM_{2.5} standard effective February 19, 2016. Each attainment plan submission for an area initially classified as nonattainment for the annual 1997 PM_{2.5} NAAQS and 24-hour 2006 PM_{2.5} NAAQS must contain quantitative milestones to be achieved no later than three years after December 31, 2014, and every three years after until the milestone date that falls within three years after the attainment date. As such, the next quantitative milestone date for these standards is December 31, 2023. The San Joaquin Valley Air Pollution Control District (District) and the California Air Resources Board (CARB) are required to submit each quantitative milestone report to the U.S. Environmental Protection Agency (EPA) no later than 90 days after the applicable milestone date.

Each quantitative milestone report submitted by a state must include, at minimum¹:

- A certification by the Governor or Governor's designee that the State Implementation Plan (SIP) control strategy is being implemented consistent with the RFP plan, as described in the applicable attainment plan;
- Technical support, including calculations, sufficient to document completion statistics for appropriate milestones and to demonstrate that the quantitative milestones have been satisfied and how the emissions reduction achieved to date compare to those required or scheduled to meet RFP;
- A discussion of whether the area will attain the applicable PM_{2.5} NAAQS by the projected attainment date for the area.

This report addresses the 1997 annual and the 2006 24-hour PM_{2.5} standards. Unless otherwise stated, emissions are calculated on an annual average basis. The 1997 annual standard is viewed as the controlling standard in the sense that the control strategy discussed in the *2018 Plan for the 1997, 2006, and 2012 PM_{2.5} Standards (2018 PM_{2.5} Plan)* provides for attainment of the 1997 annual standard and establishes sufficient emission reductions and reasonable further progress toward attainment of the 2006 24-hour standard by the attainment date.

¹ 40 CFR 51.1013(b)

EPA requires that the RFP demonstration for milestone years include direct PM_{2.5}, as well as PM precursors that have been determined to be significant. As demonstrated in Appendices G and K of the District's Revision of the *2018 PM_{2.5} Plan*, CARB modeling determined ammonia, volatile organic compounds (VOCs), and oxides of sulfur (SO_x) do not contribute significantly to PM_{2.5} levels that exceed the 1997 or 2006 PM_{2.5} standards in the Valley. As such, this report appropriately only addresses direct PM_{2.5} and NO_x emissions.

The direct PM_{2.5} and NO_x control strategy developed to meet the federal PM_{2.5} standards includes commitments for emission reductions from both stationary and area sources under the jurisdiction of the District, as well as significant emission reductions from mobile sources under CARB's jurisdiction. As such, quantitative milestones have been established to report progress towards emission reductions committed to occur from the implementation these control measures. These milestones are outlined in Appendix H of the Revised *2018 PM_{2.5} Plan*.

The District and CARB collaboratively developed this report to demonstrate that Reasonable Further Progress has been made towards attainment of the 1997 annual PM_{2.5} standard in 2023 and the 2006 24-hour PM_{2.5} standard in 2024, as committed to in the *2018 PM_{2.5} Plan*. Based on guidance received from EPA, these quantitative milestone reports address progress towards attainment achieved for each quantitative milestone in the period between 2013 (the base year of the *2018 PM_{2.5} Plan*), through the quantitative milestone date of December 31, 2023. This report specifically addresses progress through the 2021-2023 Quantitative Milestone period. Further details about progress made to date from the implementation of both District and CARB control measures are provided in the following report sections.

1. CONTROL MEASURE IMPLEMENTATION

1.1 DISTRICT RULES AND REGULATIONS

The District has a host of stringent regulatory programs, with rules that have set benchmarks for California and the nation for a wide array of sources, including boilers, steam generators, internal combustion engines, refineries, residential fireplaces, glass manufacturing, and agricultural burning. Only CARB and EPA can directly regulate tailpipe emissions from mobile sources. However, the District has also adopted innovative regulations such as Indirect Source Review and Employer-based Trip Reduction to reduce emissions from mobile sources within the District's limited jurisdiction over these sources. Additionally, the District has assembled a variety of extremely successful incentive programs that have achieved significant emission reductions from sources outside of the District's regulatory purview. The District operates its incentive programs and conducts dedicated outreach to target emission reductions from residential fireplaces, commercial charbroilers, off-road equipment, and on-road vehicles. District efforts through regulatory measures and successful, one-of-a-kind programs have resulted in substantial emission reductions throughout the Valley.

Quantitative milestones provide an objective way to ensure that reasonable progress towards attainment of federal air quality standards is being achieved as expected and outlined in attainment plans. Significant emission reductions have been achieved to date through the implementation of control measures outlined in attainment plans, including the District's 2008, 2012, 2015, 2016, and 2018 PM_{2.5} attainment plans addressing the 1997 annual and 2006 24-hour PM_{2.5} NAAQS. In the reporting period of 2013 to 2023, direct PM_{2.5} emissions in the Valley were reduced by 3.26 tons² per day (tpd) and NO_x emissions were reduced by 144.94 tpd. For the 1997 annual and 2006 24-hour PM_{2.5} standards, specific commitments have been outlined as quantitative milestones to be achieved in milestone years to ensure that progress is being made towards attainment of the standards.

For the 1997 and 2006 PM_{2.5} NAAQS milestone year of 2023, the District is reporting on the following milestones:

- The status of SIP measures adopted between 2021-2023 as per the schedule included in the adopted Plan, including:
 - Residential Wood Burning Strategy,
 - Commercial Underfired Charbroiler Incentive-Based Strategy, and
 - Status of SIP measures adopted between 2021 and 2023 as per the schedule included in the *2018 PM_{2.5} Plan*.

The status of implementation of the above District strategies and related regulatory actions are further discussed below.

Milestone: Status of District Residential Wood Burning Strategy and Compliance Milestones in District Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters)

The District's residential wood burning emission reduction strategy includes wood burning curtailments implemented through District Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters), in conjunction with the District's incentive grant program for fireplace and woodstove change-outs, and robust public education and outreach efforts. This approach is designed to improve public health by reducing toxic wood smoke emissions in Valley neighborhoods during the peak PM_{2.5} winter season (November through February), and has proven to be extremely effective in advancing the District's objectives to attain the PM_{2.5} federal standards and protect public health.

On June 20, 2019, based on commitments in the District's *2018 PM_{2.5} Plan*, the District amended Rule 4901 to further lower wood burning curtailment levels, as well as approve enhancements to other facets of the District's residential woodsmoke reduction strategy, including increased grant funding levels, public outreach and education, enforcement, and air quality forecasting programs. The amendments to Rule 4901 included new requirements for significant remodels of a fireplace or chimney that

² Emissions of PM_{2.5} in 2023 are 62.979 tpd, based on CEPAM v1.00. After adjusting projected agriculture burning emissions with actual totals based on the District's Area Sources Emission Inventory Methodology for Agriculture Burning (<https://ww2.valleyair.org/media/e4ghmjcc/agburningpfw2007.pdf>), the total 2023 inventory is 55.317 tpd PM_{2.5}.

require the removal of open hearth fireplaces or replacement to cleaner devices, only allowing seasoned wood to be burned, enhanced compliance during transfers of residential real property, further restrictions on installations of new wood burning devices, and enhanced visible emission limitations. The District Governing Board also approved amendments to establish more stringent curtailment levels in the Hot Spot counties of Madera, Fresno, and Kern as follows:

- Lower the “No Burning Unless Registered” threshold (Level One) from the current level of 20 $\mu\text{g}/\text{m}^3$ to 12 $\mu\text{g}/\text{m}^3$, and
- Lower the “No Burning for All” threshold (Level Two) from the current level of 65 $\mu\text{g}/\text{m}^3$ to 35 $\mu\text{g}/\text{m}^3$.

The total direct PM_{2.5} emission reductions estimated to be achieved from the enhancements to the District’s wood burning reduction strategy, including both regulatory and incentive-based strategies, is 0.42 tons per day (tpd), on an annual average basis, as committed to in the *2018 PM_{2.5} Plan*. The total PM_{2.5} reductions achieved from the amendment of Rule 4901 to require stricter wood burning curtailment levels was estimated to be 0.26 tpd, beginning in the 2019/2020 winter burning season. Following these amendments, EPA recognized in their February 2020 evaluation of BACM and MSM for the *2018 PM_{2.5} Plan* for the 2006 PM_{2.5} NAAQS that Rule 4901 implements BACM and MSM levels of control.³ In July 2020, EPA took final action to approve the 2019 amendments to Rule 4901 and provide SIP credit for emissions reductions achieved through the strategy.⁴

The District’s *Fireplace and Woodstove Change-Out Program* plays a key role in reducing emissions from residential wood burning by encouraging a transition from the use of higher polluting wood burning heaters and fireplaces to cleaner alternatives. Through the program, the District offers financial incentives for the change-out of old, high-polluting open-hearth fireplaces or uncertified devices with new cleaner, certified units. The program has provided the resources necessary for thousands of Valley resident to make positive changes in their residential wood-burning practices and is a significant part of the District’s overall strategy to reduce the impacts of residential wood burning. Since 2009, the District has issued over 28,000 vouchers with more than \$57.6 million in program funding allocated to date. As a measure within the *2018 PM_{2.5} Plan*, since 2016 the District has achieved additional PM_{2.5} emission reductions of over 0.3 tpd through the District’s Fireplace and Woodstove Change-Out Program. The Association of Air Pollution Control Agencies (AAPCA), a national organization focused on assisting state and local air quality agencies with implementation and technical issues with the federal Clean Air Act, recognized the District for groundbreaking technology, innovative practices, and exemplary operations in the field of air pollution control by awarding the District’s Residential Wood Smoke Reduction Strategy as a 2022 Best Practices in Air Pollution Control program.

³ EPA. *Technical Support Document, Evaluation of BACM/MSM, San Joaquin Valley PM_{2.5} Plan for the PM_{2.5} Plan for the 2006 PM_{2.5} NAAQS*. (February 2020). Retrieved from: <https://www.regulations.gov/document/EPA-R09-OAR-2019-0318-0005>

⁴ EPA. *Air Plan Approval; California; San Joaquin Valley Unified Air Pollution Control District*. 85 FR 44206-44209. (July 22, 2020). Retrieved from: <https://www.govinfo.gov/content/pkg/FR-2020-07-22/pdf/2020-14298.pdf>

As demonstrated, the District continues to achieve significant emission reductions through the combined regulatory and incentive-based Residential Wood Burning Strategy. Emission reductions achieved through stricter wood burning curtailment levels required by recent amendments to District Rule 4901, combined with the continued replacement of older, high-polluting wood burning devices with cleaner units through the District's Fireplace and Woodstove Change-Out Incentive Program, have resulted in significant emission reductions to date. This successful strategy will provide continued emission reductions through the 1997 Annual PM_{2.5} NAAQS attainment year of 2023 and the 2006 PM_{2.5} NAAQS attainment year of 2024.

Based on the progress discussed above in implementing the Residential Wood Burning Strategy, the District has met this milestone through 2023.

Milestone: Status of Commercial Underfired Charbroiler Incentive-Based Strategy

District Rule 4692 requires the installation and operation of PM control devices on chain-driven commercial charbroilers that cook 400 pounds of meat or more per week. Charbroiler exhaust transfers through the catalytic oxidizer with little loss of temperature. As high-temperature exhaust goes through the heated catalyst, PM and VOC are oxidized to carbon dioxide and water vapor. This chemical reaction releases energy that heats the catalyst and transfers it to a heat recovery system. Through current Rule 4692 requirements, affected chain-driven commercial charbroilers are required to have emissions control devices that achieve 83% control efficiency for PM and 86% control efficiency for VOC. The District has attempted to impose similar requirements for underfired charbroiling operations, however the unavailability of a feasible and cost-effective control technology has been a barrier to establishing these requirements. Other air districts in California have encountered similar difficulties in identifying and requiring compliant control technologies for underfired charbroilers.

The District has contributed substantial time and effort into researching the emissions produced by underfired charbroilers in order to form a sound approach to controlling charbroiler emissions. Since 2009, the District has partnered with the South Coast Air Quality Management District (SCAQMD), Bay Area Air Quality Management District (BAAQMD), and EPA to further the research and evaluation of emission control technologies for underfired charbroilers. Through this effort, underfired charbroiler technology assessments have been conducted at UC-Riverside College of Engineering's Center for Environmental Research & Technology (CE-CERT). The District provided in-kind technical support and the research was funded with over \$500,000 in contributions provided by SCAQMD, BAAQMD, and EPA. This effort led to the establishment of published testing methodology, SCAQMD Method 5.1, which has been used as a benchmark methodology to standardize the testing of control efficiencies of kitchen exhaust pollution control units.

To assist with better understanding of cooking operations from underfired charbroilers in the Valley, and as an early measure in support of the District's commitment in the *2018 PM_{2.5} Plan*, Rule 4692 was amended on June 21, 2018, to add reporting and

registration requirements for commercial underfired charbroiler units, including Permit-Exempt Equipment Registration (PEER) requirements for units with a meat throughput greater than 400 pounds/week, or greater than 10,800 pounds/year, not to exceed 875 pounds/week. With the District's continued research and outreach efforts to local restaurants subject to the reporting requirement established by the aforementioned amendment, as of December 2023, the District has received 4,481 one-time reports, of which 919 restaurants have reported operation of an underfired charbroiler. Of these restaurants, 155 have reported a cooking throughput of at least 400 lbs of meat per week and have subsequently obtained a required PEER.

Additionally, the District created the Restaurant Charbroiler Technology Partnership (RCTP) program with the goal of reducing PM2.5 emissions from underfired commercial charbroilers. The program was initially allocated with \$750,000 of incentive funding to fully cover all emissions control device installation costs as well as two years of device maintenance. To date, the Habit Burger Grill has successfully completed two years of demonstration of a Molitron wet scrubber in their Stockton restaurant. Initially, the project experienced hood fan sizing issues, resulting in the restaurant being smoked out and forced to close temporarily. The Habit Burger Grill has subsequently installed these control devices on additional new restaurants, with some of these installations in the Valley. The District is still actively pursuing restaurants for demonstration opportunities in the Valley.

In recognition of the ongoing focus in this area, the District Governing Board adopted a multipronged strategy to promote emission reductions from this category, while minimizing the impact on restaurants during the COVID-19 pandemic. The Commercial Underfired Charbroiling Emission Reduction Strategy, which includes the following elements:

- (1) Enhancing the Restaurant Charbroiler Technology Partnership incentive program;
- (2) Developing guidance for Valley cities/counties interested in establishing local ordinances for commercial underfired charbroilers;
- (3) Assisting CARB in the development of the new statewide Suggested Control Measures for controlling emissions from underfired charbroiling;
- (4) Working with CARB and EPA to update emissions inventory and attainment modeling to assist the District and CARB in developing new control strategies; and
- (5) Forming a new restaurant working group to collaboratively explore opportunities for underfired charbroiling control technologies with CARB, other air districts, manufacturers, industry organizations, and restaurants.

Since the adoption of the strategy, the District has continued evaluation of potential control technologies, had meetings with the Restaurant Association and Valley restaurants, and held working group meetings with CARB and South Coast AQMD to discuss technology barriers. Additionally, during the 2021-2023 milestone period, the District Governing Board approved additional funding for AB 617 Community Emission Reduction Programs for Shafter and South Central Fresno. The District will continue

collaboration with restaurants and control technology manufacturers to test and demonstrate control technologies throughout the next quantitative milestone period. Based on the progress discussed above, the District has met this milestone through 2023.

Milestone: Status of SIP measures adopted between 2021 and 2023, as per the schedule included in the 2018 PM_{2.5} Plan

The *2018 PM_{2.5} Plan* contains a comprehensive suite of regulatory measures to be implemented by the District to achieve the emission reductions necessary to attain the PM_{2.5} standards as expeditiously as practicable. The Plan builds upon comprehensive strategies already in place from previously adopted District plans. The new regulatory measures proposed by the District, combined with existing measures achieving new emission reductions, will achieve the emission reductions necessary to attain each federal PM_{2.5} standard as expeditiously as practicable. The Plan demonstrates the District's ongoing efforts to improve air quality in the Valley through a comprehensive regulatory and incentive-based strategy.

The following sections include a discussion on the District's progress towards implementing the SIP measures in the reporting period.

Rule 4103 (Open Burning)

The District Governing Board approved the *Supplemental Report and Recommendations on Agricultural Burning* that establishes an updated schedule for the near-complete phase-out of remaining agricultural open burning in the Valley by January 1, 2025. On June 18, 2021, CARB provided concurrence with the District's Report and Recommendations. The adopted accelerated phase-out schedule for remaining crop types is only feasible through significantly increased state funding to assist in developing new alternatives, increasing fleet capacities, and offsetting the significant incremental cost of implementing new alternatives to open burning. Since adoption of the phase-out strategy, the District, in partnership with CARB, has worked to implement the adopted phase-out schedule, and has adopted enhancements to the District's Ag Burn Alternatives Grant Program. The District has also conducted comprehensive outreach to inform Valley stakeholders about the upcoming prohibitions on agricultural burning and available funding to support the use of alternatives.

Rule 4311 (Flares)

The District Governing Board adopted amendments to Rule 4311 on December 17, 2020. District Rule 4311 limits emissions of NO_x, SO_x, and VOC emissions from the operation of flares. Prior to adoption, the District conducted an extensive public process, beginning with a scoping meeting about the rule development process in August 2017. Three sets of operator workgroup meetings were held October 2017, April 2019, and July 2019. Additionally, four public workshops were held November 2019, July 2020, September 2020, and October 2020.

During the public process, District staff presented the objectives of the rulemaking, explained the process, and solicited suggestions from stakeholders and the public.

Information about the regulatory amendment was made publicly available at meetings of the Citizens' Advisory Committee, Environmental Justice Advisory Group, and AB 617 Community Steering Committees. After an extensive public process and the publication of the proposed amendment on November 17, 2020, the District Governing Board amended Rule 4311 on December 17, 2020, to remove exemptions for non-major source facilities and landfill facilities, as well as setting annual throughput thresholds requiring flare operators to either reduce their use of flares or install ultra-low NOx flare systems. Operators will be required to reduce flare throughput below applicable thresholds or install ultra-low NOx flare technology by 2024. The adopted requirements in Rule 4311 are estimated to achieve emission reductions of 0.19 tpd of NOx, 0.03 tpd of PM2.5, and 0.39 tpd of VOCs by 2024; exceeding the 0.05 tpd NOx reduction committed in the *2018 PM2.5 Plan*.

Rule 4306 (Boilers, Steam Generators, and Process Heaters – Phase 3) and Rule 4320 (Advanced Emission Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr)

The District Governing Board adopted amendments to District Rules 4306 and 4320 on December 17, 2020. These amendments are the latest in a series of rulemaking efforts that have resulted in significant emissions reductions from boilers, steam generators, and process heaters with a heat input greater than 5 MMBtu/hr. These units are used in a variety of different Valley industries, including electrical utilities, oil and gas production, food and agricultural processing, and service and commercial facilities. The *2018 PM2.5 Plan* included commitments to further reduce NOx emissions from this source category.

In support of this commitment, the adopted amendments to Rules 4306 and 4320 include lower NOx emissions limits for a variety of unit classes and categories, and include dates for the submission of required emission control plans, authority to construct applications, and final compliance deadlines. Overall, the amendments are estimated to achieve 0.19 tpd of NOx emission reductions in 2024, to be applied towards the District's aggregate commitment of 1.88 tpd of NOx reductions included in the *2018 PM2.5 Plan*. An additional 0.03 tpd of NOx emission reductions is estimated to be achieved by proposed amendments to Rule 4306 in 2030. The adopted amendments to Rule 4320 are estimated to achieve an additional 0.45 tpd (46%) of NOx emission reductions from this source category in 2024.

Rule 4352 (Solid Fuel Fired Boilers, Steam Generators, and Process Heaters)

The District Governing Board adopted amendments to Rule 4352 on December 16, 2021. The purpose of Rule 4352 is to limit NOx, CO, PM10, and SOx emissions from any boiler, steam generator or process heater fired on solid fuel. Operations use these units in a broad range of industrial, commercial, and institutional settings. These units have the ability to fire on a variety of solid fuels, including coal, petroleum coke, biomass, tire-derived fuel, and municipal solid waste (MSW).

Based on a comprehensive technical analysis, in-depth review of local, state, and federal regulations, and a robust public process, the District Governing Board adopted several amendments to Rule 4352 on December 16, 2021 to include even more

stringent NOx limits, and to establish PM10 and SOx emission limits for applicable units operating in the Valley. The amendments also added language to clarify definitions, remove expired language, and establish compliance timelines. The adopted amendments to District Rule 4352 are estimated to reduce 0.282 tpd PM2.5 and 0.711 tpd NOx in 2024.

Rule 4354 (Glass Melting Furnaces)

The District adopted Rule 4354 on September 14, 1994, and subsequently amended the rule seven times, to limit NOx, SOx, VOC, CO, and PM10 emissions from glass melting furnaces. The District most recently adopted amendments to Rule 4354 on December 16, 2021. Rule 4354 limits emissions of NOx, CO, VOCs, SOx and PM from glass melting furnaces. These amendments implement even more stringent NOx, SOx, and PM emissions limits for glass melting furnaces, including NOx limits as low as 0.75 pounds of NOx per ton of glass pulled, establishing requirements that are more stringent than any other rule in non-attainment areas in California and the nation. Due to the high costs associated with the control technology necessary to comply with the proposed final NOx emissions limits, a phased compliance schedule was adopted in which operators must comply with Phase I NOx emissions limits by 2024, and with final NOx emissions limits by 2030 or upon the completion of the next furnace rebuild, whichever is sooner. Amendments to District Rule 4354 will result in a 0.13 tpd PM2.5 reduction and a 0.64 tpd NOx reduction in 2024. By 2030, the adopted amendments to Rule 4354 are expected to reduce NOx emissions by 1.03 tpd.

Rule 4550 (Conservation Management Practices)

Rule 4550 was the first rule of its kind in the nation to reduce fugitive particulate emissions from agricultural operations through the reduction of passes of agricultural equipment and implementation of other conservation practices. Rule 4550 uses a menu approach of control techniques to accommodate the variability of agricultural industries in the Valley. Agricultural operations are required to maintain detailed records verifying use of the approved Conservation Management Practices. Approved CMP plans are enforced through onsite inspections and operators are required to submit applications to modify their plans when changing conservation management practices. Through this rule, PM10 emissions have been reduced by 35.3 tpd, which is approximately a 24% reduction for this source category.

During the milestone period, the District continued the public process, and conducted public workshops on December 16, 2021, and November 7, 2022. Workshop presentations provided the public with up-to-date information and research regarding new management techniques, background on the Sustainable Groundwater Management Act (SGMA) and potential implications to farming in the San Joaquin Valley, and potential rule amendments, including additional management techniques for implementation on fallowed land. Public workshops have also provided the District with industry and stakeholder input regarding feasibility, cost-effectiveness, and circumstances faced by the Valley's agriculture industry. In addition to public workshops, the District has held a number of stakeholder meetings to help inform feasibility of potential practices.

The District has continued evaluation of potential requirements for fallowed land, including evaluation of requirements in other regions. District staff evaluated research related to a variety of new control techniques, with emphasis on recent publications related to fallowed land and conservation tillage. In addition, the District has continued to monitor the implementation of SGMA in the San Joaquin Valley. Evaluation and rule development for Rule 4550 is ongoing.

Rule 4702 (Internal Combustion Engines)

District Rule 4702 applies to any internal combustion (IC) engine rated at 25 brake horsepower (bhp) or greater. The purpose of this rule is to limit NO_x, CO, VOC, and SO_x emissions from units subject to this rule. Rule 4702 has significantly reduced emissions from non-agricultural and agricultural IC engines, with substantial investments made by the affected sources to comply with the rule.

The District's Governing Board adopted amendments to Rule 4702 on August 19, 2021 to establish lower emission limits for NO_x and VOCs for several engine categories, establish PM requirements for all categories of IC engines affected by the rule, and establish SO_x control requirements for agricultural engines. Compliance with these lower emission limits is required by 2024. Additionally, the option of paying an annual fee in lieu of complying with a NO_x emissions limit was sunset on December 31, 2023. The amendments result in a total 0.62 tpd NO_x emissions reduction by 2024, with the NO_x reduction expected to increase 0.70 tpd by 2030.

Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters) and Rule 4692 (Commercial Charbroiling)

The District Governing Board adopted amendments to Rule 4901 on May 18, 2023. Progress related to this matter is described in detail above, in the beginning of section 1.1 of this report, which addresses the status of SIP measures adopted between 2021 and 2023. Per the schedule included in the *2018 PM_{2.5} Plan*, the District has met this milestone through 2023.

District Rules and Regulations Conclusion

As committed to in the *2018 PM_{2.5} Plan*, the District has met the 2023 quantitative milestones for the 1997 and 2006 PM_{2.5} NAAQS. The District's stationary source regulatory program and other successful emission reduction measures will continue to provide emission reductions beyond 2023 to achieve the federal air quality standards for PM_{2.5}.

1.2 CARB RULES AND REGULATIONS

[This section provided by the California Air Resources Board]

The annual and 24-hour PM_{2.5} RFP demonstrations in the SJV 2018 Plan relied, in part, on reductions from California's mobile source regulations that reduce NO_x and direct PM_{2.5} emissions. The State mobile source milestones focus on those CARB

regulations that provide the most significant emissions reduction benefit to meeting RFP targets.

The mobile source emissions control program in California is the most stringent in the nation due to the severity of California's air quality challenges, the need for ongoing emission reductions, and the unique authority allowed by the CAA. California's comprehensive mobile source control program relies on four fundamental approaches:

- Stringent emissions standards that minimize emissions from new vehicles and equipment;
- In-use programs that target the existing fleet and require the use of the cleanest vehicles and emissions control technologies;
- Cleaner fuels that minimize evaporative and combustion emissions; and,
- Incentive programs that remove older, dirtier vehicles and equipment and pay for early adoption of the cleanest available technologies.

This multifaceted approach has spurred the development of increasingly cleaner technologies and fuels and achieved emission reductions across all mobile source sectors that go far beyond national programs or programs in other states. Since California mobile source programs account for a significant part of the emissions reductions in the RFP demonstration, it is appropriate to include milestones for implementation of mobile source regulations.

For the 2023 quantitative milestones for the 35 $\mu\text{g}/\text{m}^3$ 24-hour and 15 $\mu\text{g}/\text{m}^3$ annual PM_{2.5} standards, CARB is reporting on implementation of the *On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation* (Truck and Bus Regulation) and implementation of the *Heavy-Duty Engine and Vehicle Omnibus Regulation* (Omnibus Regulation) from the beginning of 2021 and through 2023 requiring cleaner engine standards on existing California heavy-duty diesel truck and buses.

Milestone 1: Implementation of the On-Road Heavy-Duty Diesel Vehicles Regulation (the Truck and Bus Regulation) between 2020 and 2023 that required particulate filters and cleaner engine standards on existing California heavy-duty diesel trucks and buses

The Truck and Bus Regulation provides substantial reductions in the years 2021 through 2023. The Truck and Bus Regulation, first adopted in 2008, represents a multi-year effort to turn over the legacy fleet of heavy-duty truck and bus engines and replace them with the cleanest technology available. Starting in 2012, the Truck and Bus Regulation included phase-in requirements applicable to an increasingly larger percentage of the heavy-duty truck and bus fleet over time; by 2023, nearly all vehicles with a pre-2010 engine must be upgraded to have exhaust emissions meeting 2010 model year engine emissions levels. The 2010 model year engine includes a particulate filter and selective catalytic reduction (SCR) catalyst technology in addition to a cleaner performing engine. The Truck and Bus Regulation applies to nearly all diesel fueled trucks and buses with a gross vehicle weight rating (GVWR) greater than

14,000 pounds (lbs.), including school buses and some off-road agricultural yard trucks.

CARB implementation of the Truck and Bus Regulation provided PM_{2.5} emission benefits that began in 2012. By 2016, the particulate filter requirement for heavy-duty trucks and buses with a GVWR of greater than 26,000 lbs. were fully implemented. The 2010 model-year engine requirement in the Truck and Bus Regulation also provided NO_x reductions. The California Department of Motor Vehicles (DMV) vehicle registration process includes compliance verification with the Truck and Bus Regulation starting January 1, 2020.

The Truck and Bus Regulation requires that by January 1, 2021, all trucks and buses with a GVWR of greater than 26,000 lbs. and originally equipped with a 2004 or older model year engine have a 2010 engine installed or have been replaced by a truck with a 2010 model year engine. By January 1, 2022, all trucks and buses with a GVWR of greater than 26,000 lbs. equipped with a 2006 and older model year engine must have a 2010 engine installed. And by January 1, 2023, nearly all applicable 2009 model year and older vehicles must have 2010 model year engines or the equivalent to 2010 engines (Table 1).

Table 1 Truck and Bus Regulation Implementation Deadlines from 2021 through 2023 for Trucks and Buses greater than 26,000 GVWR ⁵

Implementation Deadline	Vehicle Engine Year	Implementation Requirement
January 1, 2021	2004 & older	2010 Engine
January 1, 2022	2006 & older	2010 Engine
January 1, 2023	2009 & older	2010 Engine

The Truck and Bus Regulation also requires by January 1, 2021, all trucks and buses with a GVWR of 14,001 to 26,000 lbs. and originally equipped with a 2004-2006 model year engine have a 2010 engine installed or have been replaced by a new truck with a 2010 model year engine. And that by January 1, 2023, all 2009 and older model year trucks and buses with a GVWR of 14,001 to 26,000 lbs. have a 2010 engine installed or have been replaced by a new truck with a 2010 model year engine (Table 2). The Truck and Bus regulation ensures that by January 1, 2023, the vast majority of diesel trucks and buses over 14,000 pounds are no longer able to be legally registered without a 2010 or newer engine.

Table 2 Truck and Bus Regulation Implementation Deadlines from 2021 through 2023 for Trucks and Buses with GVWR from 14,001 to 26,000 lbs. ⁶

⁵ Source: CARB, Truck and Bus Regulation Compliance Requirement Overview, June 18, 2019. <https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/carb-reg-docs-pdfs/diesel-truck-regulations-remediated-final-a11y.pdf>

⁶ Source: CARB, Truck and Bus Regulation Compliance Requirement Overview, June 18, 2019. <https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/carb-reg-docs-pdfs/diesel-truck-regulations-remediated-final-a11y.pdf>

Implementation Deadline	Vehicle Engine Year	Implementation Requirement
January 1, 2021	2006 & older	2010 Engine
January 1, 2023	2009 & older	2010 Engine

CARB has implemented the Truck and Bus Regulation requirements through 2023 and has met Milestone 1.

Milestone 2: Implementation of the California Low-NOx Engine Standard for new on-road heavy-duty engines used in medium- and heavy-duty trucks purchased in California

The Heavy-Duty Engine and Vehicle Omnibus Regulation (Omnibus Regulation) was approved by the CARB in 2020 and implements two measures from CARB's 2016 State Strategy for the State Implementation Plan: the "Low-NOx Engine Standard" which reduces NOx emissions from new engines by 90 percent; and portions of the "Lower In Use Emission Performance Level," which ensures heavy-duty vehicles on the road continue to maintain emissions controls throughout their useful lives. The low-NOx engine standard requirements within the Omnibus Regulation begin with engine model year (MY) 2024, meaning that some engine families were certified to the low-NOx standard and manufactured in 2023 to be sold as MY 2024 compliant engine families. Further, the regulation has an early implementation option that provides benefits to manufacturers that meet the more stringent engine standards in MYs 2022 and 2023.

The Omnibus Regulation contains provisions allowing the generation of credits from the implementation of 2022 and 2023 MY heavy-duty zero-emission powertrains, which can then be used to offset emission deficits from sales of legacy engines. In 2024, a manufacturer may elect to certify a heavy-duty diesel engine family or families not meeting the low-NOx standard set by the Omnibus Regulation. This provision requires that the manufacturer offset excess NOx and PM emissions deficits generated by the sale of legacy engines in California by using credits from zero-emission sales, or combustion engine credits from the same service class, or conducting projects in disadvantaged communities to offset the excess emissions within five years.

CARB has implemented applicable provisions and requirements within the Omnibus Regulation through 2023 and has met Milestone 2.

Additional CARB programs that provide emission reductions from mobile sources between the beginning of 2021 and the end of 2023.

In addition to the two regulations described above, CARB is implementing numerous other mobile source regulations and programs that provide emissions reductions during the relevant period of the beginning of 2021 through 2023. Key regulations for on-road light-duty vehicles include CARB's Advanced Clean Cars program, which consists of the Low-Emission Vehicle (LEV) and Zero-Emission Vehicle (ZEV) regulations. CARB's ZEV regulation delivers NO_x and ROG emission reductions by setting manufacturer requirements driving sales of zero-emission passenger cars. The LEV fleet emission standards have driven the ongoing clean-up of combustion technology. In 2021, the LEV III regulation set lower particulate emission standards for passenger cars and light- and medium-duty vehicles. These standards are the maximum particulate emissions allowed at full useful life. The Smog Check program ensures clean in-use performance, and the continued lower in-use performance assessment will do so even more effectively in the future. California's reformulated gasoline standard requires fuel producers to meet increasingly stringent standards, which has reduced NO_x, ROG, and toxic emissions from gasoline.

For on-road heavy-duty vehicles, in addition to Truck and Bus and the Omnibus Regulation described above, key regulations include the Advanced Clean Trucks Regulation, the Clean Truck Check, and the Innovative Clean Transit Regulation. CARB's Clean Truck Check, a first-of-its-kind inspection and maintenance program for heavy-duty vehicles, began implementation in 2023 and is anticipated to drastically reduce emissions from in-use vehicles in the coming years. Starting January 1, 2020, the Innovative Clean Transit regulation required transit agencies to purchase buses with Low-NO_x engines. Diesel fuel requirements have further reduced emissions from on-road heavy-duty diesel engines operating in California.

Between 2021 and 2023, CARB also implemented programs to lower emissions from the off-road sector using more stringent engine standards, in-use fleet rules, idling limits, and increasing electrification of smaller equipment. The In-use Off-road Diesel Vehicle Regulation required decreasing overall emissions rates of diesel particulates and NO_x from in use, heavy-duty diesel vehicles and equipment used in applications such as construction, mining, and industrial operations.

Mobile Source Program Conclusion

CARB has met the 2023 quantitative milestones for the 35 µg/m³ 24-hour and 15 µg/m³ annual PM_{2.5} standards. NO_x emissions in the Valley from vehicles subject to the Truck and Bus Regulation and the Omnibus Regulation were 70.1 tons per day (tpd) in 2020 and had decreased to 38.2 tpd in 2023, a reduction of 31.8 tpd or 45%. PM_{2.5} emissions from the same vehicle categories were 1.04 tpd in 2020 and 0.76 tpd in 2023, a 0.28 tpd, or 27%, reduction. These milestones ensure emissions were reduced in 2020. CARB's mobile source control program will continue to provide emission reductions beyond 2023, ultimately contributing to attainment of the standards.

2. DEMONSTRATION OF REASONABLE FURTHER PROGRESS

RFP means such annual incremental reductions in emissions of the relevant air pollutant as are required or may reasonably be required by EPA for the purposes of ensuring attainment of the applicable national ambient air quality standard by the applicable date. Each attainment plan for a PM_{2.5} nonattainment area is required to include an RFP plan that demonstrates that sources in the area will achieve such annual incremental reductions in emissions of direct PM_{2.5} and PM_{2.5} plan precursors as are necessary to ensure attainment of the applicable PM_{2.5} NAAQS as expeditiously as practicable.^{7,8}

Quantitative milestone reports are submitted to EPA to document milestones achieved, as committed to in attainment plans, and to show RFP towards attainment. Historically, EPA's interpretation of the RFP requirement has been "generally linear progress" from the base year to the attainment year, demonstrated at RFP milestone years.⁹

The tables below demonstrate that the RFP target emissions levels for each standard, calculated in Appendix H of the 2021 Revision of the *2018 PM_{2.5} Plan*, have been satisfied through the emission reductions that have been achieved through the year 2023, as reflected in the emissions inventory for the *2018 PM_{2.5} Plan*.

Table 3 RFP Target Analysis for the 1997 PM_{2.5} NAAQS

Pollutant	2023 RFP Target Emissions Level (tpd)	2023 Emissions Inventory (tpd)	RFP satisfied?
Direct PM _{2.5}	58.1	55.3	YES
NO _x	150.6	147.2	YES

Table 4 RFP Target Analysis for the 2006 PM_{2.5} NAAQS

Pollutant	2023 RFP Target Emissions Level (tpd)	2023 Emissions Inventory (tpd)	RFP satisfied?
Direct PM _{2.5}	58.1	55.3	YES
NO _x	150.6	147.2	YES

Emissions of PM_{2.5} in 2023 are 62.979 tpd, based on CEPAM v1.00. After adjusting projected agriculture burning emissions with actual totals based on the District's Area Sources Emission Inventory Methodology for Agriculture Burning (<https://ww2.valleyair.org/media/e4ghmjcc/agburningpfw2007.pdf>), the total 2023 inventory is 55.317 tpd PM_{2.5}.

⁷ 40 CFR §51.1012 Reasonable further progress requirements.

⁸ Clean Air Act Section 171(1)

⁹ 72 FR 20633, codified at 40 CFR 51 Subpart Z §51.1000 (definitions)

3. SUMMARY AND CONCLUSIONS

This quantitative milestone report demonstrates that the emission reductions needed for RFP have been achieved, that the 2021-2023 quantitative milestones have been met, and that ongoing progress is being made to attain the 1997 and 2006 NAAQS. Emission reductions will continue to be achieved through the implementation of both District and CARB control measures to move the Valley towards attainment of the health-protective federal PM_{2.5} air quality standards as expeditiously as practicable.