

March 30, 2021

Ms. Deborah Jordan, Acting Regional Administrator
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, California 94105
jordan.deborah@epa.gov

Dear Ms. Jordan:

The California Air Resources Board (CARB) is submitting to the United States Environmental Protection Agency (U.S. EPA) the San Joaquin Valley Air Pollution Control District's (District) *2020 Quantitative Milestone Report for the 1997 and 2006 NAAQS (2020 Report)*.

The San Joaquin Valley Air Basin is currently designated as a nonattainment area for the 65 microgram per cubic meter ($\mu\text{g}/\text{m}^3$) and 35 $\mu\text{g}/\text{m}^3$ 24-hour standards and the 15 $\mu\text{g}/\text{m}^3$ annual standard. The District addressed the Clean Air Act (Act) requirements for these standards in the *2018 Plan for the 1997, 2006, and 2012 PM2.5 Standards (2018 Plan)* including reasonable further progress (RFP) emissions targets and quantitative milestones for 2020. The Act requires PM2.5 nonattainment areas to submit a quantitative milestone report within 90 days of each RFP milestone year.

The enclosed 2020 Report documents implementation of CARB and District rules that provided the emissions reductions needed between 2013 and 2020 to meet the 2020 RFP emissions targets. The 2020 Report also demonstrates that the 2020 quantitative milestones have been met.

CARB is committed to working with U.S. EPA 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,



Richard W. Corey, Executive Officer

Enclosure

cc: See next page.

Deborah Jordan
March 30, 2021
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cc: Elizabeth Adams, Director, Region 9 U.S. Environmental Protection Agency
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Samir Sheikh, Executive Director, San Joaquin Valley Air Pollution Control District
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Edie Chang, Deputy Executive Officer

Michael T. Benjamin, Chief, Air Quality Planning and Science Division



March 30, 2021

Dr. Michael Benjamin
Division Chief, Air Quality Planning and Science Division
California Air Resources Board
1001 "I" Street
P.O. Box 2815
Sacramento, CA 95812

Dr. Benjamin:

Enclosed is the 2020 Quantitative Milestone Report for the 1997 and 2006 PM2.5 National Ambient Air Quality Standards (NAAQS). The Clean Air Act requires states to identify quantitative milestones to be achieved every three years which demonstrate reasonable further progress, and provide a report after the milestone due date. Quantitative milestones are a mechanism to provide an objective means to track progress towards attainment.

The attached quantitative milestone report satisfies the reporting requirement and demonstrates that reasonable further progress has been achieved for the 1997 and 2006 PM2.5 NAAQS. We request that the California Air Resources Board transmit this report and the appropriate documentation to the United States Environmental Protection Agency.

If you have any questions regarding this report, please contact Jessica Coria at jessica.coria@valleyair.org or (559) 230-5800. The District thanks you and your staff for your assistance and collaboration during the preparation of this report.

Sincerely,



for
Jonathan Klassen
Director of Air Quality Science and Planning

Attachments

cc: Sylvia Vanderspek

Samir Sheikh
Executive Director/Air Pollution Control Officer

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2020 QUANTITATIVE MILESTONE REPORT FOR THE 1997 AND 2006 PM_{2.5} NAAQS

March 31, 2021



2020 QUANTITATIVE MILESTONE REPORT FOR THE 1997 AND 2006 PM2.5 NAAQS

Consistent with Clean Air Act (CAA) Section 189(c)(1), the state must submit in each attainment plan for a PM2.5 nonattainment area specific quantitative milestones that demonstrate Reasonable Further Progress (RFP) toward attainment of the applicable PM2.5 National Ambient Air Quality Standards (NAAQS, or standards). A quantitative milestone report must be submitted following each quantitative milestone period.

This 2020 Quantitative Milestone Report addresses the federal annual PM2.5 standard of 15 $\mu\text{g}/\text{m}^3$ and the 24-hour PM2.5 standard of 65 $\mu\text{g}/\text{m}^3$, established in 1997. The Valley was reclassified as Serious nonattainment for the 1997 PM2.5 standard effective May 7, 2015. Each attainment plan submission for an area initially classified as moderate nonattainment for the 1997 PM2.5 NAAQS must contain quantitative milestones to be achieved no later than 3 years after 12/31/2014 and every 3 years after until the milestone date that falls within 3 years after the attainment date. As such, the next quantitative milestone date for this standard is December 31, 2020, and is addressed by this quantitative milestone report. The next quantitative milestone dates for this standard occurs on December 31, 2023.

This report also addresses the federal annual PM2.5 standard of 15 $\mu\text{g}/\text{m}^3$ and the 24-hour PM2.5 standard of 35 $\mu\text{g}/\text{m}^3$, established in 2006. The Valley was reclassified as Serious nonattainment for the 2006 PM2.5 standard effective February 19, 2015. Each attainment plan submission for an area initially classified as moderate nonattainment for the 2006 PM2.5 NAAQS must contain quantitative milestones to be achieved no later than 3 years after 12/31/2014 and every 3 years after until the milestone date that falls within 3 years after the attainment date. As such, the next quantitative milestone date for this standard is December 31, 2020, and is addressed by this quantitative milestone report. The next quantitative milestone dates for this standard occurs on December 31, 2023. Each quantitative milestone report is to be submitted to the United States Environmental Protection Agency (EPA) no later than 90 days after the applicable milestone date. As demonstrated by this report, each quantitative milestone report submitted by a state must include, at minimum¹:

- A certification by the Governor or Governor's designee that the 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 PM2.5 NAAQS by the projected attainment date for the area.

¹ 40 CFR 51.1013(b)

This report addresses the 1997 and 2006 24-hour standards and the 1997 annual standard. Unless otherwise stated, emissions are on an annual average basis since the 1997 annual standard is viewed as controlling in the sense that the control strategy in the 2018 PM_{2.5} Plan which provides for attainment of the 1997 annual standard also provides sufficient emission reductions for attainment of the 1997 24-hour standard and reasonable further progress towards attaining the 2006 24-hour standard.

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 *2018 Plan for the 1997, 2006, and 2012 PM_{2.5} Standards (2018 PM_{2.5} Plan)*, California Air Resources Board (CARB) modeling determined ammonia, VOCs, and SO_x do not contribute significantly to PM_{2.5} levels that exceed the 1997, 2006, or 2012 NAAQS 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 air quality standards for PM_{2.5} in the Valley includes commitments for emission reductions from both stationary sources under the jurisdiction of the San Joaquin Valley Air Pollution Control District (District), as well as significant emission reductions from mobile sources, regulated by CARB. As such, quantitative milestones have been established to report progress towards emission reductions committed to occur from the implementation of both stationary and from mobile source control measures. These milestones are outlined in Appendix H of the *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 NAAQS in 2020 and the 2006 NAAQS in 2024 as committed to in the *2018 PM_{2.5} Plan*. Based on guidance received from EPA, this report will 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, 2020. 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 one of the most stringent regulatory programs, with rules that have set benchmarks for California and the nation for a wide variety of sources, including boilers, steam generators, internal combustion engines, refineries, residential fireplaces, glass manufacturing, and agricultural burning. Only states and the federal government 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 an extremely successful incentive program that has achieved significant emissions reductions from sources outside of the District's regulatory purview.

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 emissions reductions have been achieved to date through the implementation of control measures outlined in attainment plans, including the District's 2008, 2012, and 2018 PM_{2.5} attainment plans addressing the 1997 and 2006 PM_{2.5} NAAQS. In the reporting period of 2013 to 2020, direct PM_{2.5} and NO_x emissions in the Valley have been reduced by 3.5 tons per day (tpd) and 113.0 tpd, respectively. For the 1997 and 2006 PM_{2.5} NAAQS, 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 2020, the District is reporting on the following milestones:

- The status of SIP measures adopted between 2018 and 2020 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 2017 and 2020 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)

Enhancements to the District's Residential Wood Burning Strategy were identified as quantitative milestones in the *2016 PM_{2.5} Plan* and the *2018 PM_{2.5} Plan*. The District takes a multifaceted and proactive approach to reducing emissions from wood burning fireplaces and wood burning heaters in the Valley. District Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters) reduces emissions from residential burning through stringent curtailment requirements during the wood-burning season. Through the District's Check Before You Burn program, the District has declared and enforced episodic wood burning curtailments, also called "No Burn" days, since 2003. Check Before You Burn and District Rule 4901 reduce harmful species of PM_{2.5} when and where those reductions are most needed, in impacted urbanized areas when the local weather is forecast to hamper particulate matter dispersion.

The District's Burn Cleaner Wood Stove Change-out Program (Burn Cleaner Program) plays a key role in the success of the transition from older more polluting wood burning heaters and open hearth fireplaces to cleaner wood burning heaters and natural gas-fired devices. Since 2006, the Burn Cleaner Program has been helping residents overcome some of the financial obstacles in purchasing cleaner alternatives. Currently more than 30 hearth retailers in the Valley have partnered with the District to successfully implement the Burn Cleaner Program. Additionally, the District has a successful outreach and education program with regards to residential wood burning

and educating Valley residents about air quality, the effects of air pollution on the population's health, and on options they can take to reduce emissions.

Rule 4901 was amended on June 20, 2019 to include enhanced Valleywide measures and targeted measures focused in specific Hot Spot areas of the Valley (Madera, Fresno, and Kern counties) that will achieve further emission reductions where they are needed most to protect public health and help the Valley attain federally mandated air quality standards. The Valleywide amendments to Rule 4901 included new requirements for significant remodels of a fireplace or chimney that 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 amendments to Rule 4901 also established 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 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 District Rule 4901 to require stricter wood burning curtailment levels was estimated to be 0.26 tpd, beginning in the 2019/2020 winter burning season. The methodology for the calculation of this value is included in the Rule 4901 Amendment Staff report from June 2019.

Along with emission reductions calculated to be achieved through lower wood burning curtailment levels required by the recent Rule 4901 amendments, additional PM_{2.5} emission reductions of at least 0.16 tpd will be achieved through the District's Burn Cleaner Program by 2024. As committed to in the *2018 PM_{2.5} Plan*, District staff will be quantifying the emission reductions achieved through this voluntary woodstove change-out incentive program for credit in the SIP. From the 2013 base year of the *2018 PM_{2.5} Plan* through the milestone date of December 31, 2020, the District has replaced 17,740 units through the Burn Cleaner Program. To support the implementation of the new enhanced curtailment thresholds in Hot Spot counties and to maximize the effectiveness of limited available resources, in 2019, the District increased incentive grants in areas subject to the new more stringent curtailment levels to encourage participation and achieve the needed transition to cleaner devices and associated emissions reductions.

As demonstrated above, 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 Burn Cleaner Program, has resulted in significant emission

reductions to date. This successful strategy will result in continued emission reductions through the 1997 PM_{2.5} NAAQS attainment year of 2020 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 2020.

Milestone: Status of Commercial Underfired Charbroiler Incentive-Based Strategy

Reporting on the status of the District's Commercial Underfired Charbroiler incentive-based strategy was identified as a quantitative milestone in the *2018 PM_{2.5} Plan*. Significant progress has been made during this reporting period, as described below.

Since 2002, the District has required the installation and operation of particulate matter control devices on chain-driven commercial charbroilers through District Rule 4692 (Commercial Charbroilers). Rule 4692 applies to owners and operators of commercial cooking operations using chain-driven and underfired charbroilers to cook meat, including beef, lamb, pork, poultry, fish, and seafood. The rule currently requires that chain-driven charbroilers be equipped and operated with a certified catalytic oxidizer control device and maintained in good working order to minimize emissions. The unavailability of a technologically feasible and cost-effective control technology has been the barrier to the District's attempt to enact similar requirements for underfired charbroiling operations. Current emission control efforts are aimed at an incentive-based approach to fund the installation of controls for commercial underfired charbroilers within urban boundaries in hot-spot areas of Fresno, Kern, and Madera counties, with a potential future year regulatory requirement to encourage participation by those restaurants.

Rule 4692 was amended on June 21, 2018, to add reporting and registration requirements for commercial underfired charbroiler units including:

- Owner or operator of a commercial underfired charbroiler required to submit a one-time report to provide information about the location, size, fuel source, usage, and meat cooking throughputs of underfired charbroiler units;
- Requirements for record keeping of total quantity, in pounds, of meat cooked on commercial underfired charbroilers; and
- Underfired charbroiler Permit-Exempt Equipment Registration (PEER) required for units with a meat throughput greater than 400 pounds/week, or greater than 10,800 pounds/year, not to exceed 875 pounds/week.

Upon adoption of the regulatory amendment, the District conducted outreach to affected restaurants, with the vast majority of restaurants subject to the reporting requirement now having submitted the required information. To date, the District has received over 4,100 one-time reports, of which 878 restaurants have reported operation of an underfired charbroiler. Of these 878 restaurants, 145 have reported a cooking throughput of at least 400 lbs of meat per week and have subsequently obtained a required PEER.

In June 2015, the District's Governing Board approved \$750,000 to fund the Restaurant Charbroiler Technology Partnership (RCTP) program to provide funding for restaurants to install particulate control systems for under-fired charbroilers as demonstration projects to assess their feasibility and effectiveness. The District has been working with restaurants and control technology manufacturers to test and demonstrate control technologies. This program funds the full cost of purchase, installation, operation, maintenance of control equipment, and other costs such as modifications to the existing system configurations and structural reinforcements.

To date, the RCTP program has resulted in a successful installation of a wet-scrubber based control device at Habit Burger Grill in Stockton, CA. The District is continuing to work with other additional restaurant owners to potentially install pollution control units utilizing the incentive funding available through the RCTP. Additional applications have been received from local commercial cooking operations interested in participating in the RCTP program. However, feasibility issues related to required building infrastructure upgrades to support the weight and footprint of control units, city permitting requirements, and the burdensome time and cost of maintenance required to keep potential control technologies operational have resulted in the owners/operators of some of these facilities being uninterested in pursuing control unit installation.

The unprecedented impacts of the COVID-19 pandemic to the restaurant industry in 2020 has further exacerbated challenges faced by restaurant operators in installing control technologies, with many existing restaurants facing limited revenue streams or closures in the coming months and beyond. In recognition of these impacts, in December 2020, the District Governing Board adopted a multipronged strategy to promote emission reductions, while minimizing the impact on restaurants during the COVID-19 pandemic.

The adopted strategy 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. The implementation of this strategy and the development of potential regulations for commercial underfired charbroilers, as technologically and economically feasible, will be ongoing in 2021.

Based on the progress discussed above in implementing the Commercial Underfired Charbroiler Incentive-Based Strategy, the District has met this milestone through 2020.

Milestone: Status of SIP measures adopted between 2017 and 2020, 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 emissions 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 emissions reductions will achieve the emissions 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 4311 (Flares)

District Rule 4311 limits emissions of NO_x, SO_x, and VOC emissions from the operation of flares. 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 NO_x flare systems. Operators will be required to reduce flare throughput below applicable thresholds or install ultra-low NO_x flare technology by 2024. The adopted requirements in Rule 4311 are estimated to achieve emission reductions of 0.19 tons per day (tpd) of NO_x, 0.03 tpd of PM_{2.5}, and 0.39 tpd of VOCs; exceeding the 0.05 tpd NO_x reduction committed in the 2018 PM_{2.5} 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 PM_{2.5} Plan included commitments to further reduce NO_x emissions from this source category.

In support of this commitment, the adopted amendments to Rules 4306 and 4320 include lower NO_x emissions limits for a variety of unit classes and categories, and includes 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 tons per day (tpd) of NO_x emission reductions in 2024, to be applied towards the District's aggregate commitment of 1.88 tpd of NO_x reductions included in the 2018 PM_{2.5} Plan. An additional 0.03 tpd of NO_x 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, although District staff are not proposing these reductions for State Implementation Plan (SIP) credit at this time.

Rule 4702 (Internal Combustion Engines)

The District began the public process for Rule 4702 (Internal Combustion Engines) in 2019. A scoping meeting to launch the regulatory development effort was held on December 5, 2019 to present, discuss, and receive feedback on potential amendment to this rule. Two public workshops have also been held on September 24, and November 19, 2020, in which the potential rule amendments, emission reductions, and costs were presented for public feedback. A strike-out and underlined copy of the draft rule was posted on December 29, 2020, and District staff is currently accepting public comment on the draft proposed amendments. Rule 4702 is scheduled to go before the District Governing Board in 2021. The extended rule development schedule is not expected to affect the implementation date for Rule 4702, or the timing for compliance with the proposed requirements and associated emission reductions.

Rule 4352 (Solid Fuel Fired Boilers) and Rule 4354 (Glass Melting Furnaces)

The District also began the public process for Rule 4354 (Glass Melting Furnaces) and Rule 4352 (Solid Fuel Fired Boilers) in 2020. A scoping meeting to launch each regulatory development effort was held on December 3, 2020 to present, discuss, and receive feedback on potential amendments to these rules. Ongoing efforts will include additional public workshops and technical evaluations of the economic and technological feasibility of further controls for each source category, with action on each rule planned for 2021.

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

Based on the progress discussed above in addressing the status of SIP measures adopted between 2017 and 2020 as per the schedule included in the *2018 PM2.5 Plan*, the District has met this milestone through 2020.

District Rules and Regulations Conclusion

As committed to in the *2018 PM2.5 Plan*, the District has met the 2020 quantitative milestones for the 1997 and 2006 PM2.5 NAAQS. The District's stationary source regulatory program and other successful emission reduction measures will continue to provide emission reductions beyond 2020 to achieve the federal air quality standards for PM2.5.

1.2 CARB RULES AND REGULATIONS

The RFP demonstration in the 2018 PM_{2.5} Plan relied, in part, on reductions from California 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 emission reduction benefits to meeting the 2020 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 Clean Air Act (Act). 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 emissions 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 35 µg/m³ 24-hour, 65 µg/m³ 24-hour, and 15 µg/m³ annual PM_{2.5} standard 2020 quantitative milestones, CARB is reporting on the following two milestones:

1. Implementation of the *On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation* (Truck and Bus Regulation) between 2017 and 2020 that required particulate filters and cleaner engine standards on existing California heavy-duty diesel trucks and buses; and
2. The status of SIP measures adopted between 2017 and 2020, including Advanced Clean Cars II and the Heavy-Duty Vehicle Inspection and Maintenance Program as part of the Lower In-Use Emission Performance Level measure.

Milestone 1. On-Road Heavy-Duty Diesel Vehicles Regulation Requirements from 2017 through 2020

The Truck and Bus Regulation provides substantial reductions in the years 2017 through 2020. 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 pre-2010 vehicles must be upgraded to have exhaust emissions meeting 2010 model year engine emissions levels. The 2010 model year engine includes a particulate filter in addition to a cleaner performing engine and therefore provides both PM2.5 and NOx benefits. 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 PM2.5 emission benefits that began in 2012. By 2016, the particulate filter requirement for heavy-duty trucks and buses with a GVWR of greater than 26,001 lbs. was fully implemented in the San Joaquin Valley. The 2010 model-year engine requirement in the Truck and Bus Regulation also provided NOx reductions. By the beginning of 2021, all trucks and buses with a GVWR of greater than 26,001 lbs. and equipped with a 2004 and older model year engines were required to have a 2010 engine installed or have been replaced by a truck with a 2010 model year engine (Table 3).

Table 1

Truck and Bus Regulation Implementation Deadlines from 2018 through 2020 for Trucks and Buses greater than 26,001 GVWR

Implementation Deadline	Vehicle Engine Year	Implementation Requirement
January 1, 2021	2004 & older	2010 Engine

<https://www.arb.ca.gov/regact/2014/truckbus14/tb14appa.pdf>, page A-18

The Truck and Bus regulation required that by the end of 2020, all trucks and buses with a GVWR of 14,000 to 26,000 lbs. and 2006 model year engines and older have 2010 engines installed or have been replaced by a new truck with a 2010 model year engine (Table 4).

Table 2

Truck and Bus Regulation Implementation Deadlines from 2018 through 2020 for Trucks and Buses with GVWR from 14,001 to 26,000 lbs.

Implementation Deadline	Vehicle Engine Year	Implementation Requirement
January 1, 2018	1998	2010 Engine
January 1, 2019	1999	2010 Engine
January 1, 2020	2003 & older	2010 Engine
January 1, 2021	2004-2006	2010 Engine

<https://www.arb.ca.gov/regact/2014/truckbus14/tb14appa.pdf>, page A-17

The Truck and Bus Regulation is designed to achieve reductions of both NOx and PM2.5. NOx emissions in the Valley from vehicles regulated by the Truck and Bus

Regulation were 128.7 tpd in 2013 and had decreased to 70.1 tpd in 2020, a reduction of 58.6 tpd or 45.6 percent. PM_{2.5} emissions from the same vehicle categories were 4.05 tpd in 2013 and 1.04 tpd in 2020, a 3.01 tpd or 74.3 percent reduction. The Truck and Bus Regulation provided a significant portion of these reductions.

CARB has implemented all of the Truck and Bus Regulation requirements through 2020 and has met Milestone 1.

Milestone 2. Status of SIP Measures Adopted Between 2017 and 2020

CARB committed to report on the status of SIP measures adopted between 2017 and 2020, including Advanced Clean Cars II (ACC II) and the Heavy-Duty Vehicle Inspection and Maintenance Program (HD I&M) as part of the Lower In-Use Emission Performance Level measure.

Advanced Clean Cars II

CARB is developing the next generation of light duty vehicle regulations known as the Advanced Clean Cars II (ACC II). The ACC II will seek to reduce criteria and greenhouse gas emissions from new light- and medium-duty vehicles beyond the 2025 model year, and increase the number of zero emission vehicles (ZEV) for sale. In September 2020, staff presented current analysis and regulation concepts for modifications to the criteria pollutant and greenhouse gas (Low Emission Vehicle or LEV IV) regulations, preliminary proposals to support wider scale adoption of new ZEVs, and the preliminary staff projections of costs for future battery electric vehicles (BEV) technologies². The next public workshop will occur in the spring of 2021 with a more comprehensive suite of regulation concepts.

ACC II is scheduled for Board consideration in June of 2022.

Heavy-Duty Vehicle Inspection and Maintenance

CARB staff, in consultation with its State agency partners,³ is developing a comprehensive heavy-duty vehicle inspection and maintenance program (HD I&M) as directed by Senate Bill 210 (Leyva; Statutes of 2019). The proposed program would apply to all on-road non-gasoline⁴ heavy-duty vehicles with a gross vehicle weight rating over 14,000 pounds that operate in California, including vehicles registered out of state and out of country. This robust program would be the first-of-its-kind to rely on remote telematics to periodically download and transmit engines' OBD data to CARB for use in identifying malfunctioning emissions-related components and requiring timely repairs. The periodic testing component would be complemented by roadside emissions monitoring (remote sensing devices and/or CARB's Portable Emissions Acquisition System known as PEACS) to detect high emitting vehicles between periodic test cycles and require additional testing and repair to ensure emissions control components are

² <https://ww2.arb.ca.gov/advanced-clean-cars-ii-meetings-workshops>

³ The California Department of Motor Vehicles (DMV), California Highway Patrol (CHP), the Bureau of Automotive Repair (BAR), and the California Department of Food and Agriculture (CDFA).

⁴ Heavy-duty gasoline vehicles with a gross vehicle weight rating over 14,000 pounds are already required to comply with BAR's Smog Check program.

operating properly. Vehicle owners would be required to demonstrate that their vehicles' emissions control systems are properly functioning, thereby reducing excess NOx and PM emissions resulting from mal-maintenance and tampering. Key program elements include: 1) streamlined testing processes that nearly eliminate vehicle downtime for inspections; 2) requirements for all heavy-duty vehicles to possess a valid compliance certificate accessible upon request by CARB or CHP inspectors; and 3) the ability of DMV to withhold vehicle registration on non-compliant California vehicles. The regulation is projected to begin implementation starting January 1, 2023.

To ensure that the benefits of the HD I&M program will be maximized in the near-term, CARB is planning to deploy a network of PEAQS sensors in the South Coast and San Joaquin Valley regions by 2023. PEAQS captures a portion of the emissions from the exhaust plumes of passing heavy duty vehicles and then within seconds reports the concentration of pollutants, including carbon dioxide (CO₂), black carbon particulate matter (BC), and nitrogen oxide (NO), in the vehicle exhaust. Under this regulation, enforcement action will be initiated on high emitting trucks screened by PEAQS and repairs will be required if follow up tests indicate the need for maintenance.

CARB staff has conducted a series of public workshops and workgroup meetings for HD I&M to engage stakeholders and invite their input throughout CARB's public process for program development and will continue to do so throughout 2021. The Board will consider the proposed HD I&M regulation at its December 2021 Board hearing.

Adopted CARB SIP Measures

To date, CARB has adopted seven measures committed to in the 2018 PM_{2.5} Plan (see Table 5). Together, these adopted measures account for emissions reductions in 2024 of 6 tpd of NOx and 0.3 tpd of PM_{2.5}.

Table 3
Adopted CARB SIP Measures

Measure	Adopted
Low-NOx Engine Standard - California Action (adopted as Heavy-Duty (HD) Low-NOx Omnibus)	August 2020
Advanced Clean Local Trucks, Last Mile Delivery (adopted as Advanced Clean Trucks)	June 2020
Accelerated Turnover of Agricultural Equipment Incentive Measure	December 2019
Zero-Emission Airport Shuttle Buses	June 2019
Innovative Clean Transit	December 2018
Amended Warranty Requirements for HD Vehicles	June 2018
Lower Opacity Limits for HD Vehicles	May 2018

Turnover of agricultural equipment in the Valley has been successful in achieving near-term and ongoing reductions of both NOx and direct PM_{2.5}. For more than a decade, the District's grant program to fund replacement of old, dirty pieces of agricultural equipment with new, cleaner models, in collaboration with Valley agricultural

stakeholders, has successfully achieved cost-effective NO_x and PM reductions while reducing community exposure to toxic diesel pollution. The Accelerated Turnover of Agricultural Equipment Incentive Measure quantifies reductions in 2024 and 2025 from this turnover of agricultural equipment and engines, and demonstrates how those emission reductions meet U.S. EPA requirements to qualify for SIP credit. Based on identified funding, CARB submitted documentation to U.S. EPA to officially take SIP credit for 5.9 tpd of NO_x and 0.3 tpd of PM_{2.5} reductions. U.S. EPA proposed approval of this measure in March 2020. Additional funding continues to be available for accelerated replacement of agricultural equipment. CARB and the District will develop an additional incentive measure to take SIP credit for additional emission reductions from this sector.

CARB has met Milestone 2 by providing the status of SIP measures included in the 2018 PM_{2.5} Plan.

Mobile Source Program Conclusion

CARB has met the 2020 quantitative milestones for the 35 µg/m³ 24-hour, 65 µg/m³ 24-hour, and 15 µg/m³ annual PM_{2.5} standards. These milestones ensure emissions were reduced in 2020. CARB's mobile source control program will continue to provide emission reductions beyond 2020, ultimately contributing to attainment of the standards.

2. DEMONSTRATION OF REASONABLE FURTHER PROGRESS

The term “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 purpose 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.^{5,6}

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.⁷ In its most recent PM_{2.5} Implementation Rule, EPA clarified that RFP requirements may be satisfied through generally linear progress, or through a stepwise demonstration. Table H-8 of the *2018 PM_{2.5} Plan* demonstrates linear RFP for the 1997 65 µg/m³ 24-hour PM_{2.5} standard. As a part of the submittal of the *2018 PM_{2.5} Plan*, CARB and the District submitted justification to EPA to explain why generally linear progress is not appropriate for the RFP demonstrations for the 35 µg/m³ 24-hour PM_{2.5} standard. The state relied on a stepwise demonstration for RFP for the 2006 PM_{2.5} NAAQS, due to the time required to implement additional control requirements at sources in the Valley and to achieve associate emissions reductions.

The tables below demonstrates that the RFP target emissions levels for each standard, calculated in Appendix H of the *2018 PM_{2.5} Plan* and the supplemental technical correction, have been satisfied through the emission reductions that have been achieved up to the year 2020, as reflected in the latest emissions inventory, California Emission Projection Analysis Model (CEPAM), 2016 SIP Baseline Emission Projections, Version 1.05.

⁵ 40 CFR §51.1012 Reasonable further progress requirements.

⁶ Clean Air Act Section 171(1)

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

Table 4
RFP Target Analysis for the 1997 PM_{2.5} NAAQS

Pollutant	2020 RFP Target Emissions Level (tpd)	2020 Attainment Emissions Inventory (tpd)	RFP satisfied?
Direct PM _{2.5}	59.0	59.0	YES
NO _x	203.3	203.3	YES

Table 5
RFP Target Analysis for the 2006 PM_{2.5} NAAQS

Pollutant	2020 RFP Target Emissions Level (tpd)	2020 Attainment Emissions Inventory (tpd)	RFP satisfied?
Direct PM _{2.5}	59.0	59.0	YES
NO _x	203.3	203.3	YES

3. SUMMARY AND CONCLUSIONS

This quantitative milestone report demonstrates that the emission reductions needed for RFP have been achieved, that the 2020 quantitative milestones have been met, and thus that ongoing progress is being made to attain the 1997 NAAQS by 2020 and the 2006 NAAQS by 2024, as committed in the District's *2018 PM_{2.5} Plan*. 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.