

# **South Coast On-Road Heavy-Duty Vehicle Incentive Measure (2019 Progress Report)**

Covering Projects Completed Through 12/31/2019

March 30, 2020





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# Introduction

The CARB *2016 State Strategy for the State Implementation Plan* (State SIP Strategy) contains the State's emission reduction commitment for the South Coast Air Quality Management District (South Coast or District) attainment demonstration for the federal 80 parts per billion 8-hour ozone standard (80 ppb standard) in 2023 including a commitment to adopt an on-road heavy-duty truck incentive measure. On March 22, 2018, the California Air Resources Board (CARB or Board) adopted the South Coast On-Road Heavy-Duty Incentive Measure (South Coast Incentive Measure) to fulfill the commitment for Board consideration and demonstrates how an increment of emissions reductions from incentive programs will be quantified towards the State's aggregate commitment in the California State Implementation Plan (SIP). The South Coast Incentive Measure committed to one ton per day (tpd) of oxides of nitrogen (NOx) from the aggregate commitment. CARB submitted the South Coast Incentive Measure to U.S. Environmental Protection Agency (U.S. EPA) to be included in the California SIP. This document is the first annual progress report for the South Coast Incentive Measure.

According to U.S. EPA guidelines, emissions reductions achieved from the implementation of an incentive program can be credited towards the State's aggregate commitment if they meet the following integrity elements: enforceable, quantifiable, surplus, and permanent.<sup>1</sup> The reductions achieved in the South Coast from turning over certain trucks during 2019 meet all of these integrity elements. These projects are included in this progress report.

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<sup>1</sup> See "Guidance on Incorporating Voluntary Mobile Source Emission Reduction Programs in State Implementation Plans (SIPs)," October 24, 1997, at page 6-7; "Improving Air Quality with Economic Incentive Programs," January 2001 at Section 4.1; "Incorporating Emerging and Voluntary Measures in a State Implementation Plan (SIP)," September 2004 at pages 3-4' and "Diesel Retrofits: Quantifying and Using Their Emission Benefits in SIPs and Conformity," February 2014 at pages 27-29.

As part of the South Coast Incentive Measure enforceable commitment, CARB must submit annual reports, including this report, which includes the required elements listed below.

- Identify the portion of the 1,300 projects funded through the previous year by project identification number, project life, and implementation date, description of both baseline and new equipment, applicable incentive program guidelines, and quantified emission reductions;
- Describe any changes to the 2017 Carl Moyer Memorial Air Quality Standards Attainment Program (Moyer Program) Guidelines and related impacts on program integrity;
- Document CARB and District actions to monitor selected projects for compliance with contract requirements; and
- Determine whether the identified projects are projected to achieve the full one ton per day of NOx emission reductions in the South Coast Air Basin (Basin) in 2023.

CARB staff collaborated with District staff to identify categories of trucks, captive in the Basin, to turn over using 2019 through 2022 funding and achieve the first ton of emissions reductions from this effort. The reductions from eligible projects will be credited against CARB's 2023 aggregate emission reduction commitment for the 80 ppb standard in the Basin.

This first annual report on the South Coast Incentive Measure shows the progress made towards incentivizing the turnover of older diesel trucks to the Low-NOx engine.

As part of the South Coast Incentive Measure, CARB committed to reducing one ton tpd of NOx emissions by turning over 1,300 on-road, heavy-duty compression ignition truck repower and replacement projects in accordance with the Carl Moyer Memorial Air Quality Standards Attainment Program (Moyer Program) 2017 Guidelines.

## Projects Funded and Completed in 2019

### Funding Update

The State legislature has directed millions of dollars towards incentive programs. These incentive programs focus on accelerating the turnover of older and dirtier vehicles to newer and cleaner ones. Since the Board adopted the South Coast Incentive Measure, the State legislature adopted and the Governor signed Assembly Bill (AB) 617, which established the Community Air Protection Program (CAPP). CAPP provides a new funding source implemented through the Moyer Program and Proposition 1B: Goods Movement Emission Reduction Program (Prop 1B).

Other incentive funding, such as the Air Quality Improvement Program and Greenhouse Gas Reduction Fund, is channeled into the California Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP). These incentive funding sources and programs have heavy-duty truck projects with significant amounts of emissions reductions from Low-NOx engines operating in the Basin since 2016.

### First Year Project Ramp-up

A startup period for the South Coast Incentive Measure projects was anticipated with fewer projects implemented in the first year. Availability of the cleaner replacement engines envisioned is increasing. CARB first certified the 8.9 liter Low-NOx engine in October 2016 and 11.9 liter Low-NOx engine in December 2017. The 8.9 liter engine is envisioned for the repower of refuse trucks and the 11.9 liter engine is envisioned for the replacement of drayage trucks. Once CARB has certified an engine, the engine manufacturer has a production ramp-up, which limits the availability of the cleaner engines in the early months of production. This ramp up period applies to Low-NOx engines needed for this incentive effort. Once a project

is under contract, delivery of the cleaner engines can take a year or longer. Therefore, we expect that in subsequent years availability will increase and delivery times will decrease.

### First Year Projects

As of December 31, 2019, 19 Low-NOx drayage truck projects were funded through the Moyer Program in the Basin. Project information specific to these 19 trucks is provided in *Appendix A*. Additional Moyer Program Low-NOx projects are under contract and awaiting delivery from the manufacturer. Specifically, there are 382 Moyer Program repower and replacement Low-NOx projects waiting for delivery. Once completed, we will include the project-specific information in the next annual progress report.

**Table 1: Low-NOx Project Status by Incentive Program**

Project Types	Number of Projects	NOx emissions reductions (tpd)
Completed Moyer Guideline Projects	19	0.006
Contracted Moyer Guideline Projects	382	0.17
Total	<b>401</b>	<b>0.18</b>

To meet the emissions reduction commitment, the South Coast Incentive Measure allows the use of substitute incentive measures. Prop 1B is a comparable incentive program to the Moyer Program and was approved by U.S. EPA for SIP emission reduction credit through an earlier incentive measure<sup>2</sup>. Through Prop 1B, 72 Low-NOx truck projects were completed in 2019, with 349 Low-NOx projects under contract and awaiting delivery. The project life of these Prop 1B projects will span

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<sup>2</sup> [U.S. EPA approval of Reductions Achieved from Incentive-Based Emission Reduction Measures in the San Joaquin Valley](#)

all of 2023 and are available as substitute projects if needed as implementation of this measure progresses. If these substitute projects are needed, CARB will submit the necessary demonstrations needed to achieve U.S. EPA approval for SIP emission reduction credit.

Beyond the Moyer Program and Prop 1B, other incentive programs are successfully accelerating the turnover of older diesel engines to cleaner engines like Low-NOx. For example, HVIP has turned over 1,145 trucks to Low-NOx in the Basin and has an additional 853 Low-NOx projects waiting for delivery. Moyer Program, Prop 1B, and HVIP have over 2,800 Low-NOx projects in the South Coast.

CARB is on track to achieve the South Coast Incentive Measure commitment. The Incentive programs have or are in the process of paying for over 3,000 Low-NOx trucks in the South Coast. With this significant of an investment, these incentive programs are available as substitute measures to address any shortfall that may occur in the South Coast Incentive Measure.

## Changes to Guidelines

The South Coast Incentive Measure requires CARB to report on any changes to the 2017 Moyer Program Guidelines and related impacts on program integrity. Since the 2017 Moyer Program Guidelines were adopted, there have been no changes nor any related impacts to the integrity of the Moyer Program.

## Confirmation of Project Compliance

### CARB Program Oversight

CARB works with the District to administer programs that provide financial incentives that clean the air by advancing lower-emitting engines and technologies including



the Moyer Program. The District and CARB share a commitment to make these incentive programs work efficiently and effectively to clean the air.

California Health and Safety Code sections 39500, 39808, 44286 and 44291 give CARB the authority and direction to oversee the implementation of incentive programs. The Board works to ensure the programs are conducted in a manner consistent with applicable laws and guidelines and that expected emission reductions are achieved. CARB oversight increases incentive program accountability by providing a mechanism to identify program deficiencies, make corrections, and ensure public funds are spent in a manner consistent with statutory intent. The objectives of this oversight include:

- Identify strengths of district programs that can be shared with other districts, providing stronger outcomes for incentive programs statewide
- Identify training needs for air district staff
- Highlight areas in State guidance that require clarification
- Help CARB understand local challenges in program implementation
- Strengthen the working relationship between State and local entities

Guidelines for incentive program review are found in Chapter 3, Section R of the 2017 Moyer Program Guidelines, approved by the Board April 27, 2017. The Policies and Procedures document provides districts and the public additional information on how reviews and audits are conducted for Moyer and other incentive programs.<sup>3</sup> The current version of these Policies and Procedures is available to the public on the CARB website. CARB may deviate from these Policies and Procedures with reasonable cause. If this occurs, the district under review will be notified and any significant variations in policy or procedure will be described in the program review report issued by CARB.

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<sup>3</sup> [CARB Program and Fiscal Reviews For California Emissions Reduction Incentive Programs, April 2018](#)

As part of this oversight responsibility, CARB conducted a review of the incentive programs implemented by the South Coast. In December 2019, CARB published "Air Pollution Reduction Incentive Programs, PROGRAM REVIEW REPORT, South Coast Air Quality Management District, Fiscal Years 2008-09 through 2014-15" that documents CARB's programmatic review, the projects selected for review and site inspection, and any findings, recommendations, and commendable efforts.

CARB's program review has concluded that the District's Moyer Program is efficiently and effectively achieving their emission reduction objectives. CARB staff identified no findings for the District's implementation of the Carl Moyer Program, but offers one recommendation following review of project files. CARB recommends development of additional project file procedures that may ensure file completeness and agreement with reporting databases(s). District staff has responded and acknowledged these recommendations, indicating the intent to review their file documentation procedures, and grant award agreements with additional detail and clarification for consistency.

#### District Project Oversight

The District is responsible for implementing the Moyer Program in the Basin. The District performs the following to ensure the projects meet all requirements in the 2017 Moyer Program Guidelines:

- Perform a pre-inspection to verify that all the old truck's information on the application including Vehicle Identification Number (VIN), odometer, engine serial number, etc. are as specified in the original application;
- After the new truck arrives, perform a post-inspection to ensure the new truck has the correct specifications;
- Perform a pre-dismantle inspection to verify that the replaced truck in the application is the same truck going to the dismantler and that the replaced truck has not been stripped; and

- Perform a post-destruction inspection to verify that the correct truck was destroyed properly; including a hole in the engine block and frame cut in half to ensure the engine is inoperable.

### Sample Project

*Appendix B* shows an example of the photos and documentation included in the District's inspection report. These photos are from an inspection report for one of the 19 Moyer Guideline projects listed in *Appendix A*. The photos show the replaced engine being destroyed. Photos are a typical form of documentation verifying destruction of the replaced engine. A picture of the VIN is provided to verify the engine is on the project list.

## Emission Reduction Calculations

The South Coast Incentive Measure included a sample project emission reduction calculation in *Appendix A*, using CARB's 2014 Emissions Factors (EMFAC2014) for activity data to estimate drayage and refuse truck emissions reductions. The emission reduction estimates are based on the formula<sup>4</sup> and emission factors<sup>5</sup> found in Appendix C and D of the 2017 Moyer Program Guidelines.

Table 2 summarizes the NOx emissions reductions per project as estimated in the South Coast Incentive Measure and the actual emissions reductions achieved by the 19 funded Moyer Guideline projects included in *Appendix A*. Table 2 shows actual emissions reductions are achieving emissions reductions per project that are equivalent to the estimates in the South Coast Incentive Measure.

**Table 2: NOx Emissions Reductions (tpd) per Drayage Truck Project**

	NOx Emissions Reductions (tpd)
South Coast Incentive Measure	0.0003 <sup>6</sup>
Moyer Program Reported Project	0.0003

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<sup>4</sup> **Formula C-5:** Estimated Annual Emissions Based on Mileage using Emissions Factors

<sup>5</sup> **Table D-2:** Heavy-Duty Vehicles over 33,000 pound GVWR Emission Factors, **Table D-5:** Diesel Refuse Trucks Emission Factors, and **Table D-6:** Alternative Fuel Refuse Trucks Emission Factors

<sup>6</sup> For the drayage truck calculation, the South Coast Incentive Measure Appendix A Example 1 accidentally used 58,853 miles per year for step (b) on page 24 instead of 53,853 miles per year. Therefore, the South Coast Incentive Measure should have drayage truck NOx emissions reductions at 0.0004 tpd (58,853 miles) instead of 0.0003 tpd (53,853 miles). This typographical error did not carry over in estimating the 1,300 trucks turned over and did not affect any other calculations.