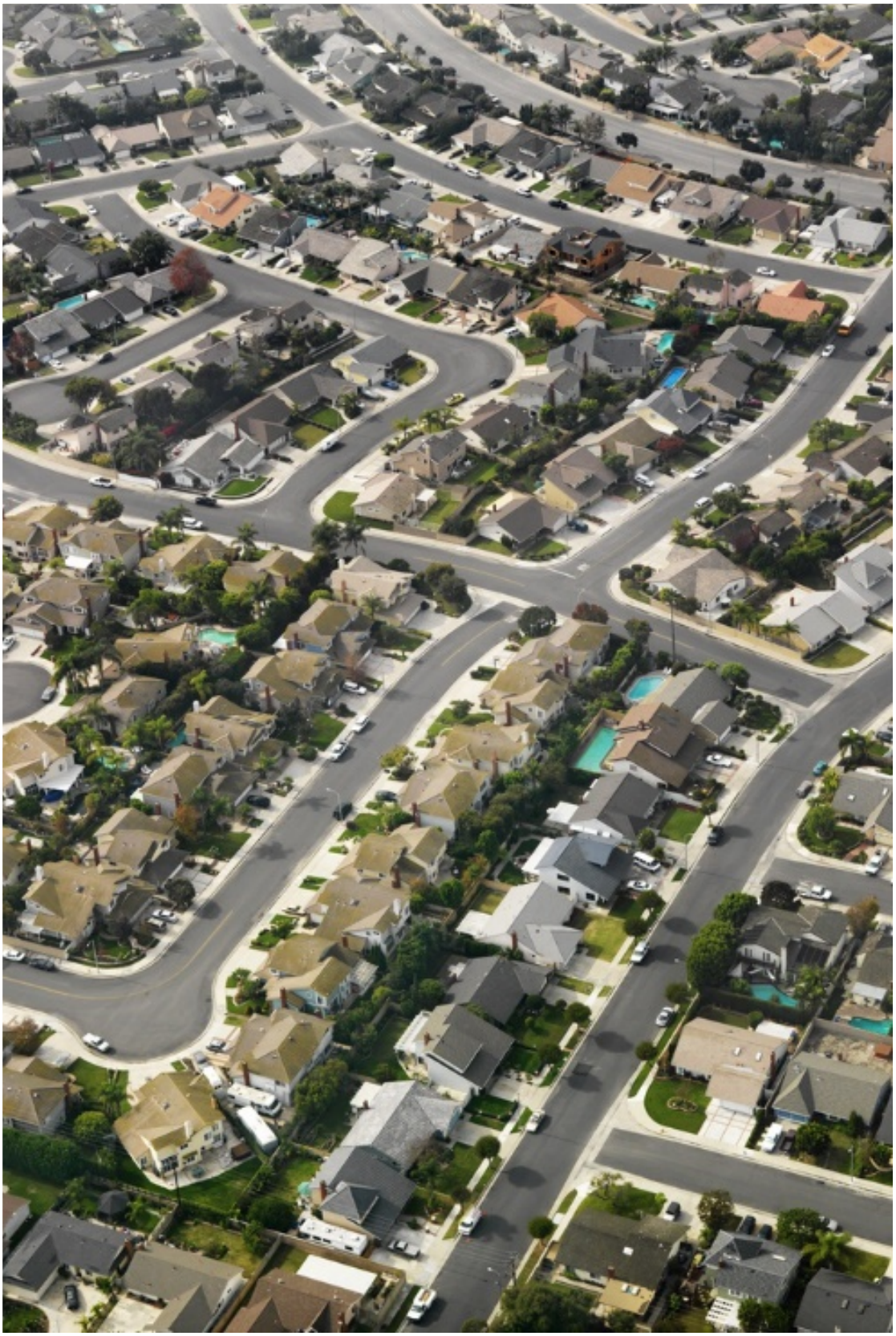
Chapter 4

Control Strategy and Implementation



Substantial emission reductions from mobile and stationary sources are needed to meet the federal health standards. Traditional regulatory opportunities are proposed along with innovative, non-traditional control approaches including recognizing co-benefits from other programs and incentives for advanced cleaner technology deployment.

In This Chapter

Introduction

The overall control strategy in the Draft 2016 Air Quality Management Plan (AQMP or Plan) provides a path to achieving emission reductions to meet air quality goals. Implementation of the 2016 AQMP will be based on a series of control measures and strategies that vary by source type (i.e., mobile or stationary) as well as by the pollutant that is being addressed. Although great strides have been made in air pollution control programs, health-based air quality standards cannot be achieved without significant further emission reductions. An integrated control strategy addressing multiple objectives provides for a more efficient path in meeting all clean air standards, including the federal PM2.5 and ozone standards. For example, the NOx emission reductions that are needed for ozone attainment also reduce PM2.5 to attainment levels. Therefore, allocating resources towards NOx reductions is a more cost-effective strategy than separately implementing controls that only benefit PM2.5. Furthermore, in designing an integrated control strategy to achieve the ozone and PM2.5 air quality standards, consideration must be given to the health of the public, the economic well-being of the region, and challenges for local business. History has shown that air quality levels can be greatly improved while maintaining a growing and vibrant economy.

The 2016 AQMP is designed to achieve the federal 2008 8-hour ozone standard (75 ppb) by 2031 and the 2012 annual PM2.5 standard (12 $\mu g/m^3$) by 2025 as a "serious" nonattainment area. The Plan also addresses attainment of the 2006 24-hour PM2.5 standard (35 $\mu g/m^3$) by 2019, which was recently reclassified as "serious" nonattainment for this standard. It also updates previous plans for the revoked 1-hour (120 ppb) and 1997 8-hour (80 ppb) ozone national ambient air quality standards (NAAQS) that have not yet been met. The California state ambient air quality standard is identical to the federal standard for annual PM2.5 and there is no state 24-hour PM2.5 standard. The State has very stringent PM10 standards (annual PM10: 20 $\mu g/m^3$ and 24-hour PM10: 50 $\mu g/m^3$). While there is no effective attainment date for the state PM standards, the state standards must be achieved as soon as practicable to protect the public health and welfare of Southern Californians. Progress towards achieving the federal PM2.5 standards is most expeditious approach for attaining both the federal and state PM standards, even though state PM10 standards are more stringent than the federal standard.

The magnitude of the NOx emission reductions needed for attainment of the ozone NAAQS poses the most significant challenge. This challenge requires an aggressive mobile source control strategy supplemented with focused and strategic stationary source control measures, and close collaboration with federal, state, and regional governments, businesses, and the public. The 2016 AQMP uses a variety of implementation approaches such as regulation, accelerated deployment of available cleaner technologies (e.g., zero emission technologies, when cost effective and feasible, and near-zero emission technologies in other applications), best management practices, co-benefits from existing programs (e.g., climate, energy efficiency), and incentives. Additional demonstration and commercialization projects will be crucial to help deploy and reduce costs for zero and near-zero emission technologies. A key element of Plan implementation will be private and public funding to help further the development and deployment of these advanced technologies. Many of the same technologies will address both air quality and climate goals, such as increased energy efficiency and reduced fuel usage. The total required emission reductions, technology readiness, cost-effectiveness, economic impacts, and interaction with

other attainment deadlines for all pollutants are critical considerations in developing an integrated multi-pollutant control strategy. This chapter outlines the proposed control strategy and the adoption and implementation schedule for the 2016 AQMP to achieve the federal health-based air quality standards in the Basin.

Overall Strategy

Need for Emission Reductions

As a consequence of the region's air quality control programs at local, State, and federal levels, the concentrations of ambient PM2.5 and ozone in the Basin have improved dramatically over the previous decades. For example, by 2013 and again in 2014, no stations measuring PM2.5 in the Basin violated the former (1997) annual PM2.5 NAAQS (15.0 µg/m^3). Yet, the Basin still exceeds federal health-based standards for both ozone and PM2.5, and experiences some of the worst air pollution in the nation. The three-year (2012–2014) design values for PM2.5 and 8-hour ozone are exceeding the 2012 annual (12 µg/m^3) and 2006 24-hour (35 µg/m^3) PM2.5 standards and the 1997 (80 ppb) and 2008 (75 ppb) 8-hour ozone standards, respectively. Details on the Basin's current air quality, historical trends, and comparisons to the NAAQS are provided in Chapter 2.

Challenges

The most significant air quality challenge in the Basin, and the primary driver for the control strategy, is the need to reduce NOx emissions sufficiently to meet the upcoming ozone standard deadlines (1-hour ozone: 120 ppb by 2023[1] and 8-hour ozone: 80 ppb by 2024 and 75 ppb by 2032). For all ozone NAAQS standards, emission reductions must be in place the previous year (2022, 2023, and 2031). The approximately 522 tons per day of total Basin NOx emissions in 2012 are projected to decrease to approximately 255 tons per day and 214 tons per day in the attainment years of 2023 and 2031, respectively, due to continued implementation of already adopted control measures. Chapter 3 describes the 2012 and future year baseline (no additional actions beyond already adopted regulations) inventories in detail. However, in the absence of additional actions, these emission reductions are not sufficient to meet the ozone standards. An additional 45 percent NOx emission reductions are needed in 2023, and an additional 55 percent NOx reductions are needed in 2031 to attain the 8-hour ozone NAAQS. These percentages are based on meeting the "carrying capacity" (the maximum amount of emissions allowable in the region that would still meet the standards) of 141 tons per day in 2023 and 96 tons per day in 2031.

Strategy

To meet the targeted carrying capacity, a comprehensive emission control strategy has been developed. The 2016 AQMP integrates a variety of control measures and implementation approaches in a cost-

[1] The standard was revoked, but the Basin has not yet met the standard. Ten years from the designation date of February 6, 2013 is the latest statutory deadline (February 6, 2023).

effective, feasible, and targeted fashion considering the co-benefits from climate change and air toxics control programs that may also produce concurrent benefits for ozone and PM2.5. Regional air quality modeling indicates that significant NOx reductions with additional strategic, limited VOC reductions will lead to attainment of the ozone standards. Maximizing emission reductions utilizing zero-emission technologies, when cost effective and feasible, and near-zero emission technologies in other applications can promote significant NOx reductions with additional VOC and PM2.5 co-benefits.

The 2016 AQMP relies strongly upon partnerships at federal, state, and local levels, seeking to expand existing collaborations and establish new coalitions. These strategies include aggressive new regulations and development of incentive funding and supporting infrastructure for early deployment of advanced control technologies. Incentive funding for stationary sources can be pursued and best applied where controls are cost-effective, but not necessarily affordable, especially when controls are considered for smaller businesses or residences. Incentive funds can be used to subsidize low-emitting equipment purchases or encourage the use of alternative approaches. Additional funding for replacement of older, high-emitting vehicles with the cleanest vehicles available is the most significant need. Expansion of supporting infrastructure for implementation of cleaner fuels also helps to accelerate the use of ultra-low emitting vehicles. The SCAQMD will continue to support technology demonstration projects for both mobile and stationary sources and will work to create new or expanded funding opportunities for earlier deployment of cleaner technologies, thus contributing to a smooth transition to zero and near-zero emission technologies in the mobile and stationary source sectors. The SCAQMD will prioritize distribution of incentive funding in environmental justice (EJ) areas and seek opportunities to expand funding to benefit the most disadvantaged communities.

Control measure ideas were developed from a number of sources, including the AQMP Advisory Group, AQMP Control Strategy Symposium, development of the AQMP White Papers, Reasonably Available Control Technology (RACT)/Reasonable Available Control Measures (RACM) Analysis, Best Available Control Technology (BACT)/Best Available Control Measures (BACM) analysis (see Appendix VI), SCAQMD staff and public input, and previous Plan proposals. As part of the 2016 AQMP control measure development, SCAQMD staff conducted an AQMP Control Strategy Symposium in June 2015 to solicit new control concepts and innovative ideas from industry experts, professional consultants, government specialists, environmental and community representatives, and other stakeholders. Suggestions from staff and stakeholder recommendations assisted in identifying additional potential control measures and assessing control measure feasibility. For each control measure, the amount of emission reductions and the cost-effectiveness is considered in the selection of the measures.

The control measures were developed based on technical and economic feasibility, as well as other factors such as promoting fair share responsibility for sources under different regulatory authorities and maximizing private/public partnerships. Table 4-1 provides an overview of the criteria used in evaluating and selecting feasible control measures. The criteria are presented in alphabetical order.

TABLE 4-1

Criteria for Evaluating 2016 AQMP Control Measures (not ranked by priority)

Criteria	Description
Cost-Effectiveness	The cost of a control measure per reduction of emissions of a particular pollutant (cost includes purchasing, installing, operating, and maintaining the control technology).
Emission Reduction Potential	The total amount of pollution that a control measure can reduce.
Enforceability	The ability to ensure compliance with a control measure.
Legal Authority	Ability of the SCAQMD or other adopting agency to legally implement the measure.
Public Acceptability	The likelihood that the public will approve or cooperate in the implementation of a control measure.
Rate of Emission Reduction	The time it will take for a control measure to reduce a certain amount of air pollution.
Technological Feasibility	The likelihood that the technology for a control measure is or will be available.

Solar Energy Technology

In accordance with California Health and Safety Code Section 40404.5, the SCAQMD continues to fulfill its directive to require the use of BACT for new sources. In consideration of the State policy (Health and Safety Code Section 40404.5) to promote and encourage the use of solar energy systems, staff has made a reasonable effort to incorporate solar energy technology into the 2016 AQMP in applications where it can be shown to be cost-effective. The generation of energy through solar collectors reduces dependence on existing fossil-fuel power plants and substantial renewable energy generating capacity from solar, wind and geothermal may reduce the need to build new power plants in the future. Even as transportation is increasingly electrified, this would have a direct criteria pollutant emission reduction impact over time and would assist in meeting the federal ozone standards. It should be noted that California Health and Safety Code Section 40414 restricts the SCAQMD from infringing on existing authority of counties and cities to plan or control land use. However, the SCAQMD is tasked to reduce criteria pollutants to meet the federal and state pollutant standards and has developed innovative approaches to achieve the standards in the 2016 AQMP. These approaches have been incorporated in a few of the control measures described below and provide an opportunity to incorporate solar energy

technology. Great progress has already been achieved in California, which is leading the nation with over half a million solar projects.[2]

Control measure ECC-01 seeks to recognize criteria pollutant co-benefits from federal, state (e.g., AB 32 – *California Global Warming Solutions Act*) and local mandates and programs to reduce greenhouse gas (GHG) emissions through several mechanisms such as market programs, renewable energy targets, incentive and rebate programs, and promoting implementation and development of new technologies. Solar programs are widely incentivized across the state and under these mandates and programs, will continue to be installed at industrial, commercial, institutional, and residential sites. As such, the criteria pollutant benefits from actions to meet climate and energy goals will be recognized under this control measure.

Similarly, control measure ECC-02 will seek criteria pollutant co-benefits from the implementation of required energy efficiency mandates such as California's Title 24 program and Senate Bill (SB) 350 (*Clean Energy Pollution Reduction Act*). The 2020 target for Title 24 will be to achieve Zero Net Energy consumption from new residential buildings utilizing new building materials, more efficient appliances, and renewable energy resources. SB 350 doubles the targeted energy efficiency savings in electricity and natural gas uses of retail customers and increases renewable energy sources to 50 percent by 2030. Solar is one form of renewable energy being implemented to assist buildings in reducing energy usage and this control measure will recognize the co-benefits from such actions. Further, control measure ECC-03 seeks to provide financial incentives to go beyond the goals achieved under ECC-02. Thus, existing residential and commercial buildings can apply for incentive monies to improve weatherization and to reduce energy use for heating, cooling, lighting, cooking, and other needs. This measure would incentivize energy efficient means such as a solar thermal pool heating system or pool covers. The most cost-effective means to achieve those reductions will vary depending on the facility, the amount of energy to be replaced, the cost of such equipment, and the life of the project. However, it is expected that applicants for the incentive money will seek the most cost-efficient options.

Modernizing industrial facilities constitutes approximately 30 percent of the total NOx emission control strategy from stationary sources in the 2016 AQMP. Control measure CMB-01 anticipates future rulemaking in combination with financial incentives for the replacement of older equipment with zero and near-zero emission technologies. Equipment electrification, use of fuel cells, battery storage, and/or combined heating and power are possible alternatives in achieving this effort. An increased need for electricity may result in increased power demand and potential emissions. Incorporating newer technologies such as solar collectors, smart grid, and energy storage with better power system management at the transmission, distribution, and behind the meter applications can reduce the need for redundant infrastructure and emissions from fossil-based generation.

[2] http://www.gosolarcalifornia.ca.gov/.

Chapter Overview

The following sections discuss the control measures, SIP commitments, overall emission reductions, and implementation as outlined below:

- SCAQMD Proposed 8-hour Ozone Strategy (see Appendix IV-A for detailed descriptions of the SCAQMD stationary source and mobile source control measures)
- State and Federal Control Measures (see Appendix IV-B for detailed descriptions of the CARB Strategy)
- SCAG's Regional Transportation Strategy and Transportation Control Measures (see Appendix IV-C for detailed descriptions of the regional transportation strategy and control measures)
- SCAQMD Proposed PM2.5 Strategy (see Appendix IV-A for detailed descriptions of the SCAQMD stationary source control measures)
- SCAQMD Proposed Contingency Measures (see Chapter 6 for a detailed discussion of the contingency requirements)
- SIP Emission Reduction Commitment
- Overall Emission Reductions
- Implementation

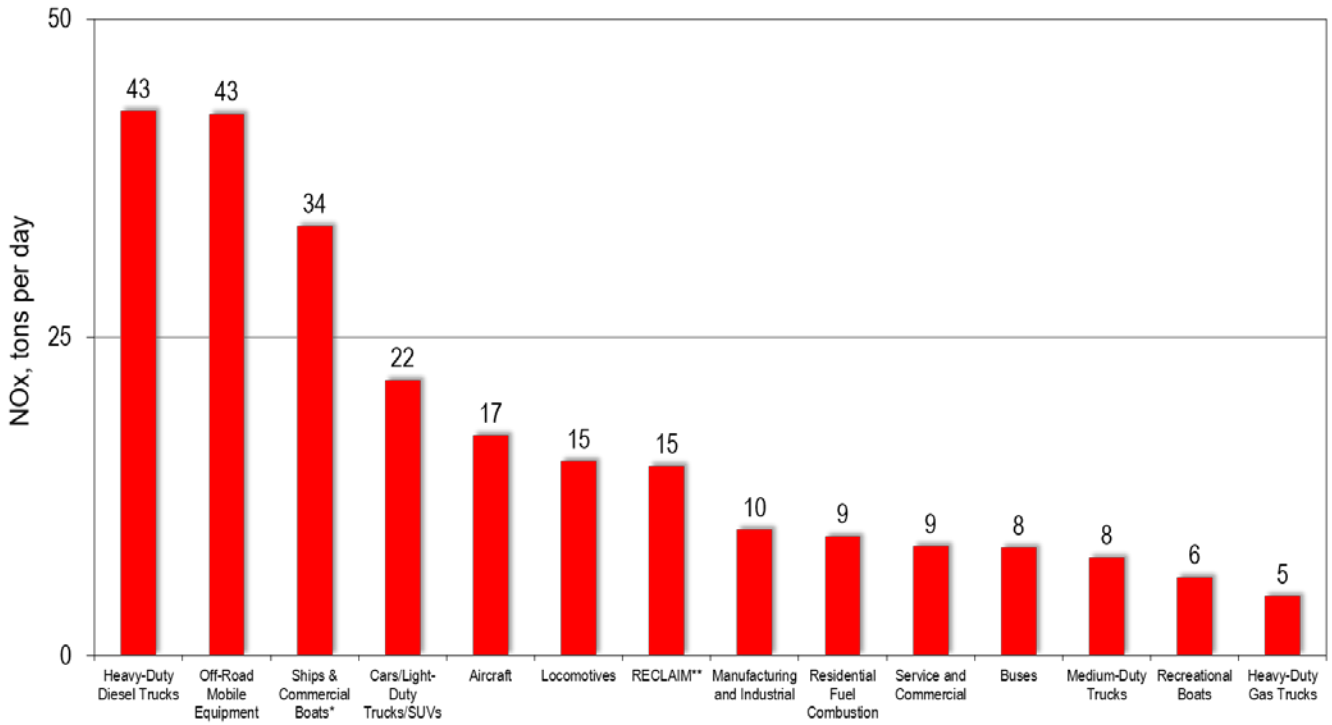
SCAQMD Proposed 8-Hour Ozone Strategy

Ozone reduction strategies must be continued and accelerated to ensure that the Basin will meet the federal 8-hour ozone standards by the latest statutory deadlines in 2024 and 2032. Proposed measures to reduce ozone include stationary and mobile source NOx reduction strategies, supplemented by limited, strategic VOC emission reductions.

To ultimately achieve the ozone ambient air quality standards, significant additional emission reductions will be necessary from a variety of sources, including those primarily under the jurisdiction of CARB (e.g., on-road motor vehicles, off-road equipment, and consumer products) and U.S. EPA (e.g., aircraft, ships, trains, and pre-empted off-road equipment). Without an adequate and fair-share level of reductions from all sources, the emission reduction burden would unfairly be shifted to stationary sources, most of which are already subject to the most stringent controls in the nation. The SCAQMD will continue to use its available regulatory authority to further control mobile source emissions where federal or state actions do not meet regional needs and to ensure the effectiveness of state and federal measures. SCAQMD's proposed 8-hour ozone control measures are comprised of stationary source measures and mobile source measures. The previous 2007 SIP for the 8-hour ozone NAAQS contained commitments for emission reductions that relied on advancement or improvement of technologies, as authorized under Section 182(e)(5) of the federal CAA. These measures, which are sometimes known as the "black box", accounted for a substantial portion of the NOx emission reductions needed to attain the federal ozone standards—approximately 200 tons per day. Given that CAA deadlines are fast approaching and the

technologies needed for attainment are identifiable, reliance on 182(e)(5) measures should be minimized to the extent feasible.

Mobile sources currently emit over 80 percent of regional NOx emissions, and therefore mobile source controls must be a significant part of the control strategy. As provided in Figure 4-1, the on-road heavy-duty truck category is projected to comprise the single largest contributor to regional NOx in 2023. Other equipment involved in goods movement, such as marine vessels, locomotives and aircraft, are also substantial NOx sources.



**Ocean going vessels = 23 tons/day*

***RECLAIM: 275 largest stationary sources, including refineries and power plants*

FIGURE 4-1

TOP NOX EMISSIONS CATEGORIES AND CORRESPONDING NOX EMISSIONS (TONS PER DAY) IN 2023 IN THE SOUTH COAST AIR BASIN (SOURCE: 2016 AQMP SUMMER PLANNING EMISSIONS INVENTORY – DECEMBER 2016)

Figure 4-2 shows projections indicating that the region must reduce regional NOx emissions by an additional 45 percent in 2023, and an additional 55 percent in 2031 (beyond projected 2023 and 2031 baseline emissions, respectively) to attain the 1997 and 2008 8-hour ozone NAAQS.

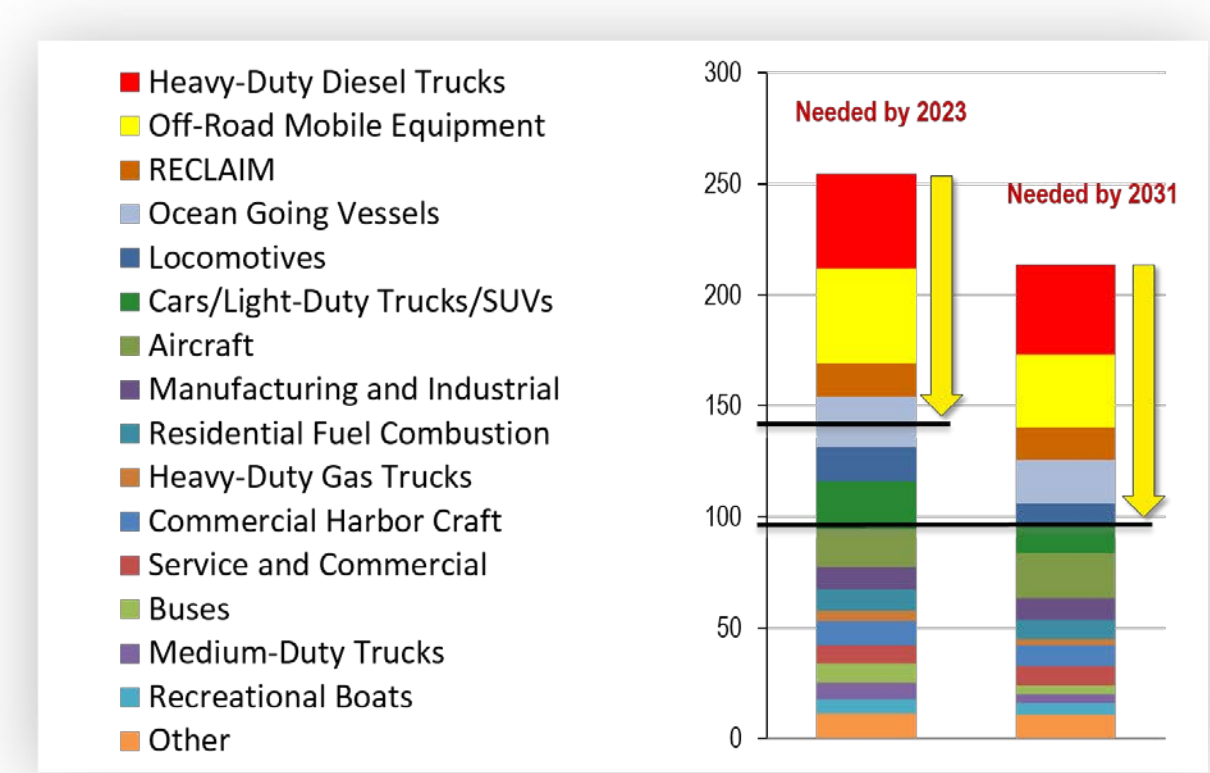


FIGURE 4-2
NEEDED NOX EMISSION REDUCTIONS TO ACHIEVE
FEDERAL 8-HOUR OZONE AMBIENT AIR QUALITY STANDARDS

Since the most significant emission sources are already subject to stringent emissions controls, attainment of the ozone standards will require broad deployment of zero and near-zero NOx emission technologies in the 2023 to 2031 timeframe. Traditional stationary combustion sources can be replaced with new lower or zero-emitting technologies, including low-NOx or more efficient equipment, electrification, or fuel cells for combined heat and power (CHP). Such replacement can apply to a single source or an entire facility. Electrification of equipment is one way to shift away from combustion sources generating NOx emissions, especially when combined with renewable, non-combustion power generation. Such combustion equipment includes engines, turbines, boilers, microturbines, etc. located at industrial and commercial facilities. The modification of residential and commercial water and space heating equipment is addressed in control measure CMB-02. Mobile sources such as trucks, locomotives, and cargo handling equipment have technological potential to achieve zero- and near-zero emission levels. Current and potential technologies include ultra-low NOx engines, hybrid-electric, battery-electric, and hydrogen fuel cell on-road vehicle technologies. New types of hybrids could also serve long-term needs while providing additional fuel diversity. These could include, for example, natural gas-electric hybrid technologies for on-road and other applications, particularly if coupled with improved after-treatment technologies. Alternative fuels such as natural gas have historically helped the region make progress toward attaining air quality standards and are generally cleaner than conventional fuels. Given the

region's need to attain air quality standards, alternative fueled engines will continue to play a major role in emission reductions. In addition, lower on-road heavy-duty engine exhaust emission standards for NOx will play an essential role for the Basin to attain the federal ozone standards since the majority of the NOx emissions from heavy-duty trucks in the Basin come from trucks that are registered out-of-state and are under federal authority. The SCAQMD Governing Board recently authorized staff to petition U.S. EPA to adopt a 0.02 g/bhp-hr NOx engine exhaust emissions standard on a nationwide basis. If successful, this action will greatly assist the region in reaching ozone air quality standards. A natural gas engine has already been certified to the 0.02 g/bhp-hr California optional NOx exhaust emissions standard, and work is underway to develop, certify and commercialize additional engines of all sizes and fuel types at or near the 0.02 g/bhp-hr level. Air quality regulatory agencies have traditionally set policies and requirements that are performance-based, and thus technology- and fuel-neutral. This is a policy that the SCAQMD intends to continue.

All technologies and fuels should be able to compete on an equal footing to meet environmental needs. This policy is consistent with the current priority on maximizing emission reductions utilizing zero-emission technologies in all applications that are shown to be cost-effective and feasible. In other applications, near-zero technologies remain essential to meet all attainment goals. In assessing these technologies for stationary sources, the SCAQMD will convene a workgroup to assess the in-basin life-cycle criteria pollutant emissions related to energy use from technologies and/or other applications such as efficiency improvements. This assessment, in part, will include future energy scenarios that are anticipated as more renewable resources are incorporated into the energy usage within the Basin. The assessments will consider emissions associated with energy time-of-use, impact of higher efficiencies, fuel switching, and future energy and regulatory markets. In addition, the assessments will consider life-cycle GHG emissions, potential toxic impacts or benefits, and utilize experts and materials from other government agencies and universities.

The SCAQMD staff believes that a combination of strong regulatory actions and incentives is the most effective means of achieving these emission reductions. In some cases, the incentive approach is the only way to address those sources currently without legal mandates to reduce emissions or not within SCAQMD authority. Other voluntary incentive programs, such as the Carl Moyer Program, provide a means to accelerate fleet turnover of outdated equipment to the cleanest commercially available equipment in a way that complements regulations. A majority of the on-road and off-road measures proposed are based on regulations combined with existing or expanded funding programs implemented by the SCAQMD or CARB. Developing, demonstrating, and deploying new technologies will require significant investments, public/private partnerships and regulatory actions.

The measures proposed in this section and further discussed in Appendices IV-A and IV-B are feasible steps that must commence in the near-term to hasten a broad transition to the technologies needed to attain federal air quality standards. Given the magnitude of needed emission reductions and the time remaining until attainment deadlines, it is important that progress and momentum to identify, and deploy needed technologies be accelerated.

Transitioning to cleaner transportation technologies will involve major costs, but also have significant public health and climate change benefits. Adopting a plan with sufficient measures to attain the ozone and PM2.5 air quality standards is not only required by federal law, but will also improve public health

and mitigate climate change. By transitioning to cleaner transportation technologies, NOx and PM2.5 emissions from transportation sources will be reduced, subsequently resulting in cleaner air quality, lower health risk across the region, and reductions in toxic risk and GHGs along goods-movement corridors. Not meeting air quality standards would not only have negative public health consequences, but would also have adverse economic impacts on the region due to potential federal sanctions.

SCAQMD Proposed Stationary Source 8-Hour Ozone Measures

The proposed stationary source ozone measures are designed to assist in the attainment of the 1997 and 2008 8-hour ozone standards (80 ppb and 75 ppb, respectively) via reductions in emissions from stationary sources of NOx and VOC. Since NOx and VOC are primary pollutants in forming ground-level ozone, the stationary source ozone measures are divided into stationary source measures for NOx and VOC. These measures target a number of source categories, including Energy and Climate Change Programs (ECC), Combustion Sources (CMB), Petroleum Operations and Fugitive VOC Emissions (FUG), Coatings and Solvents (CTS), Multiple Component Sources (MCS), Best Available Control Measures (BCM), and Compliance Flexibility Programs (FLX). Each control measure may rely on a number of control methods. There are 15 stationary source ozone measures with the majority anticipated to be adopted in the next few years and implemented after 2016. Table 4-2 provides a list of the SCAQMD proposed ozone measures for stationary sources along with the anticipated adoption date, implementation period, and emission reductions. These control measures are further categorized by the type of the measures, for example, recognition of co-benefits or incentives. Some VOC measures recognize co-benefit VOC reductions from other NOx or PM2.5 measures. There are also limited, strategic VOC control measures proposed.

The “TBD” (to be determined) measures require further technical and feasibility evaluations to determine the emission reduction potential and thus, the attainment demonstration is not dependent on these measures. However, they are included in the AQMP as part of a comprehensive plan with all feasible measures. These measures will require further development after the approval of the Plan, but could be proposed for rule or program development at a later date. Emissions reductions achieved and quantified by these measures can be applied towards contingency requirements, make up for any shortfalls in reductions from other quantified measures, be credited towards rate-of-progress reporting, and/or be incorporated into future Plan revisions.

TABLE 4-2

SCAQMD Proposed Stationary Source 8-Hour Ozone Measures

Number	Title	Adoption	Implementation Period	Implementing Agency	Emission Reductions (tpd) (2023/2031)
SCAQMD Stationary Source NOx Measures:					
Stationary Source Regulatory Measures:					
CMB-01	Transition to Zero and Near-Zero Emission Technologies for Stationary Sources [NOx, VOC]	N/A	Ongoing	SCAQMD	2.5 / 6
CMB-02	Emission Reductions from Replacement with Zero or Near-Zero NOx Appliances in Commercial and Residential Applications [NOx]	2018	2020–2031	SCAQMD	1.1 / 2.8
CMB-03	Emission Reductions from Non-Refinery Flares [NOx, VOC]	2018	2020	SCAQMD	1.4 / 1.5
CMB-04	Emission Reductions from Restaurant Burners and Residential Cooking [NOx]	2018	2022	SCAQMD	0.8 / 1.6
CMB-05	Further NOx Reductions from RECLAIM Assessment [NOx]	2022	2025	SCAQMD	0 / 5 [a]
Recognition of Co-Benefits:					
ECC-01	Co-Benefit Emission Reductions from GHG Programs, Policies, and Incentives [All Pollutants]	N/A	Ongoing	Various Agencies	TBD [b]
ECC-02	Co-Benefits from Existing Residential and Commercial Building Energy Efficiency Measures [NOx, VOC]	N/A	Ongoing	SCAQMD	0.3 / 1.1
ECC-04	Reduced Ozone Formation and Emission Reductions from Cool Roof Technology [All Pollutants]	N/A	Ongoing	SCAQMD, CEC	TBD [b]

TABLE 4-2 (CONTINUED)

SCAQMD Proposed Stationary Source 8-Hour Ozone Measures

Number	Title	Adoption	Implementation Period	Implementing Agency	Emission Reductions (tpd) (2023/2031)
SCAQMD Stationary Source NOx Measures (*continued*):					
Incentive-Based Measure:					
ECC-03	Additional Enhancements in Reducing Existing Residential Building Energy Use [NOx, VOC]	N/A	Ongoing	SCAQMD	1.2 / 2.1
Other Measures:					
FLX-01	Improved Education and Public Outreach [All Pollutants]	N/A	Ongoing	SCAQMD, Other Parties	N/A [c]
MCS-01	Improved Breakdown Procedures and Process Re-Design [All Pollutants]	TBD	TBD	SCAQMD	N/A [c]
MCS-02	Application of All Feasible Measures [All Pollutants]	TBD	TBD	SCAQMD	TBD [b]
SCAQMD Stationary Source VOC Measures:					
Corresponding VOC Reductions from NOx and PM Measures:					
ECC-02	Co-Benefits from Existing Residential and Commercial Building Energy Efficiency Measures [NOx, VOC]	N/A	Ongoing	SCAQMD	0.07 / 0.29 [d]
ECC-03	Additional Enhancements in Reducing Existing Residential Building Energy Use [NOx, VOC]	N/A	Ongoing	SCAQMD	0.2 / 0.3 [d]
CMB-01	Transition to Zero and Near-Zero Emission Technologies for Stationary Sources [NOx, VOC]	N/A	Ongoing	SCAQMD	1.2 / 2.8 [d]
CMB-03	Emission Reductions from Non-Refinery Flares [NOx, VOC]	2018	2020	SCAQMD	0.4 / 0.4 [d]
BCM-10	Emission Reductions from Greenwaste Composting [VOC, NH3]	2019	2020	SCAQMD	1.5 / 1.8 [d]

TABLE 4-2 (CONCLUDED)

SCAQMD Proposed Stationary Source 8-Hour Ozone Measures

Number	Title	Adoption	Implementation Period	Implementing Agency	Emission Reductions (tpd) (2023/2031)
SCAQMD Stationary Source VOC Measures (*continued*):					
Limited, Strategic VOC Control:					
FUG-01	Improved Leak Detection and Repair [VOC]	2019	2022	SCAQMD	2 / 2
CTS-01	Further Emission Reductions from Coatings, Solvents, Adhesives, and Sealants [VOC]	2017/2021	2020–2031	SCAQMD	1 / 2
FLX-02	Stationary Source VOC Incentives [VOC]	N/A	Ongoing	SCAQMD	TBD [b]

[a] 5 tpd reduction by 2025

[b] TBD are reductions to be determined once the measure is further evaluated, the technical assessment is complete, and inventories and cost-effective control approaches are identified, and are not relied upon for attainment demonstration purposes

[c] N/A are reductions that cannot be quantified due to the nature of the measure (e.g., outreach) or if the measure is designed to ensure reductions that have been assumed to occur will in fact occur

[d] Corresponding VOC reductions from other measures

The following provides a brief description of the proposed stationary source ozone measures. Detailed descriptions of the measures are provided in Appendix IV-A.

Stationary Source Regulatory Measures

There are five stationary source regulatory measures for NOx. The first measure is to reduce NOx emissions from traditional combustion sources, such as diesel back-up generators, by replacing older, high-emitting equipment with new, lower or zero-emitting equipment. The second measure seeks NOx emission reductions from unregulated commercial space heating furnaces and from regulations and incentives to replace existing older boilers, water heaters, and space heating furnaces and other natural gas or liquefied petroleum gas (LPG) equipment with zero emitting or lower NOx technologies. The third measure seeks to reduce NOx and utilize excess gas from non-refinery flares, the fourth measure would seek reductions from commercial restaurant burners and residential cooking appliances, and the last measure would involve transitioning the RECLAIM program into a command and control regulatory structure.

CMB-01 – TRANSITION TO ZERO AND NEAR-ZERO EMISSION TECHNOLOGIES FOR STATIONARY SOURCES: This proposed control measure reduces emissions of NOx from traditional combustion sources through replacement of old equipment with zero and near-zero emission technologies including low NOx emitting equipment, electrification, battery storage, alternative process changes, efficiency measures, or fuel cells for CHP. Replacing older higher-emitting equipment with newer lower or zero-emitting equipment can apply to a single source or an entire facility. These sources include, but are not limited to, engines, turbines, microturbines, and boilers that generate power for electricity for distributed generation, facility power, process heating, and/or steam production. Another type of combustion source identified for equipment replacement includes ovens, kilns, and furnaces. New businesses can be required or incentivized to install and operate zero-emission equipment, control equipment, technology and processes beyond the current BACT requirements. Fuel cells are also an alternative to traditional combustion methods, resulting in a reduction of NOx emissions with the co-benefit of reducing other criteria air pollutants and GHGs. Incentives may be used towards alternative process changes, such as biogas cleanup. This would help modernize a facility towards zero and near-zero technologies. This control measure would also seek energy storage systems and smart grid control technologies that provide a flexible and dispatchable resource with zero emissions. Grid based storage systems can replace the need for new peaking generation, be coupled with renewable energy generation, and reduce the need for additional energy infrastructure. Mechanisms will be explored to incentivize businesses to choose the cleanest technologies as they replace equipment and upgrade facilities, and to provide incentives to encourage businesses to move into these zero and near-zero emission technologies sooner. Over the anticipated timeline of this Plan, as emerging technologies become more widely available and costs decline, the SCAQMD will undertake rulemaking to maximize emission reductions utilizing zero emission equipment where cost-effective and feasible and near-zero emission equipment in all other applications.

CMB-02 – EMISSION REDUCTIONS FROM REPLACEMENT WITH ZERO OR NEAR-ZERO NOx APPLIANCES IN COMMERCIAL AND RESIDENTIAL APPLICATIONS: This control measure seeks annual average NOx emission reductions from unregulated commercial space heating furnaces through regulations and incentives that will replace existing older NOx appliances such as boilers, water heaters, and space heating furnaces and other natural gas or LPG equipment with zero emitting or lower NOx technologies. The measure calls for a priority on maximizing emission reductions utilizing zero-emission technologies in all applications that are shown to be cost-effective and feasible. In other applications, near-zero technologies will be incentivized to meet attainment goals. In assessing the cost-effectiveness of these technologies, full life-cycle in-Basin emissions related to energy and fuel production and transmission pathways will be considered, along with GHG emissions, toxic impacts, and anticipated future changes to the energy portfolio in the Basin. This control measure will apply to manufacturers, distributors, sellers, installers and purchasers of commercial and residential appliances and equipment. The control measure has two components. The first component is to continue to implement the Rule 1111 emission limit of NOx for residential space heaters which is 14 ng/J (20 ppm) starting in 2014. The second component is to incentivize the replacement of older boilers, water heaters and space heaters with newer and more efficient low NOx boilers, water heaters and space heaters, and/or “green technologies” such as solar heating or heat pumps. The SCAQMD will also consider potential future regulatory actions to support replacement of older space heating furnaces, water heaters and boilers with lower emissions and zero or near zero emission technologies. The new boilers and water heaters replaced through incentives would

comply with current SCAQMD rule emission limits and new space heaters would meet a specified emission limit. If required, the SCAQMD will consider amending Rules 1121 and 1111 to put in place a heat input based emission limit which will result in lower NOx emissions for high efficiency units compared with standard efficiency units. Because of the rules' heat output based limits, high efficiency water heaters and furnaces emit the same amount of NOx per day as standard efficiency units. In addition, the SCAQMD will also consider developing a rule to limit NOx emissions from those commercial and residential heating furnaces which are currently unregulated.

CMB-03 – EMISSION REDUCTIONS FROM NON-REFINERY FLARES: Flare NOx emissions are regulated through NSR and BACT, but there are currently no source-specific rules regulating NOx emissions from existing flares at non-refinery sources, such as organic liquid loading stations, tank farms, and oil and gas production, landfills and wastewater treatment facilities. This control measure proposes that, consistent with the all feasible control measures, all non-refinery flares meet current BACT for NOx emissions and thermal oxidation of VOCs. The preferred method of control would involve capturing the gas that would typically be flared and converting it into an energy source (e.g., transportation fuel, fuel cells, facility power generation). If gas recovery is not cost-effective or feasible, the installation of newer flares utilizing clean enclosed burner systems implementing BACT will be considered.

CMB-04 – EMISSION REDUCTIONS FROM RESTAURANT BURNERS AND RESIDENTIAL COOKING: This control measure applies to retail restaurants and quick service establishments utilizing commercial cooking ovens, ranges and charbroilers by funding development of, promoting and incentivizing the use and installation of low-NOx burner technologies. In addition, the SCAQMD would consider developing a manufacturer based rule to establish emission limits for cooking appliances used by restaurants and residential applications. Finally, co-benefit reductions will be sought through existing or enhanced energy efficiency programs being implemented by other entities.

CMB-05 – FURTHER NOX REDUCTIONS FROM RECLAIM ASSESSMENT: The California Health and Safety Code requires the SCAQMD to implement Best Available Retrofit Control Technology (BARCT) in the RECLAIM program as well as other stationary sources, and if BARCT advances, the SCAQMD is required to periodically re-assess the overall program caps, and reduce the RECLAIM Trading Credit (RTC) holdings to a level equivalent to command-and-control BARCT levels. The emission reductions resulting from the programmatic RTC reductions will help the Basin attain the NAAQS for ozone and PM2.5 as expeditiously as practicable. This control measure identifies a series of approaches, assessments, and analyses that can be explored to make the program more effective in ensuring equivalency with command and control regulations implementing BARCT, and to generate further NOx emission reductions at RECLAIM facilities. This would be achieved in two ways: 1) the 5 tpd NOx emission reduction commitment as soon as feasible, and no later than 2025, and 2) a transition to a command and control regulatory structure requiring BARCT level controls as soon as practicable. As many of the program's original advantages appear to be diminishing, an orderly sunset of the RECLAIM program may be the best way to maximize emissions reductions, create more regulatory certainty, and potentially reduce compliance burdens for RECLAIM facilities. A working group of stakeholders and experts will convene in the spring of 2017 to examine the future of the RECLAIM program and develop options and timing for the transition to a command-and-control regulatory structure.

Recognition of Co-Benefits

This category includes three proposed emission reduction measures that recognize emission reductions from energy and climate change related programs that consist of general GHG programs, existing residential and commercial building energy efficiency improvement, and cool roof technology.

ECC-01 – CO-BENEFIT EMISSION REDUCTIONS FROM GHG PROGRAMS, POLICIES, AND INCENTIVES: Combustion sources that emit GHGs are typically sources of criteria pollutants. Significant efforts are currently being planned and implemented to reduce GHG emissions under the State's 2020, 2030 and 2050 targets. As these GHG reduction efforts continue across multiple sectors, the reductions of criteria pollutants should be considered along with any additional enhancements needed to achieve further criteria pollutant reductions under the GHG programs. Existing and further GHG emission reductions mechanisms, including market programs, renewable energy targets, incentive and rebate programs, and promoting implementation and development of new technologies, would be evaluated and refined to maximize criteria pollutant emission reductions.

ECC-02 – CO-BENEFITS FROM EXISTING RESIDENTIAL AND COMMERCIAL BUILDING ENERGY EFFICIENCY MEASURES: This control measure would seek to account for criteria pollutant co-benefits from the implementation of required energy efficiency mandates such as California's Title 24 program and SB 350 (Clean Energy Pollution Reduction Act). The 2020 target for Title 24 will be to achieve zero net energy consumption from new residential buildings by utilizing new building materials and more efficient appliances. SB 350 doubles the additional achievable energy efficiency savings in electricity and natural gas energy uses in existing buildings and increases renewable energy sources as a share of a utility's power sources from 33 to 50 percent by 2030. This control measure will take advantage of the co-benefit emission reductions from implementation of these state regulations.

ECC-04 – REDUCED OZONE FORMATION AND EMISSION REDUCTIONS FROM COOL ROOF TECHNOLOGY: Cool roofs reflect a higher fraction of incident sunlight than traditional roofing materials. Widespread adoption of cool roofs can mitigate the urban heat island effect and can lower daytime ambient temperatures, thus slowing the rate of ozone formation. In addition, buildings equipped with cool roofs require less electricity for cooling, leading to reductions in emissions from the power generation sector. This control measure has the potential to reduce ambient ozone concentrations directly along with NOx, CO, PM, and CO2 emissions from the power generation sector. Evaporative VOC emissions will be reduced due to lower ambient temperatures in the urban areas of the Basin. However, ultra-violet solar energy can also be reflected, leading to increased ozone formation in the air column above the building. Depending on the extent of this potential adverse impact, additional physical property requirements on cool roof materials may be necessary. Three possible aspects of cool roof technology, including solar reflectance, radiative properties, and roof replacements will be incorporated into a technical modeling analysis to quantify the impact of this control measure on air quality.

Incentive-Based Measure

The 2016 AQMP includes voluntary incentive measures that are part of the overall Plan to satisfy the CAA emission reduction requirements needed to achieve attainment of the federal ozone standards in 2023 and 2031. Prior AQMPs relied primarily on the adoption of rules to implement the measures provided in those AQMPs. Such regulations involve mandatory requirements and result in generally

straightforward and enforceable reductions. With the need for reliance on voluntary incentive measures in the near-term to achieve attainment of the federal air quality standards, the SCAQMD must design programs such that the emission reductions from these incentive measures are proven to be real, quantifiable, surplus, enforceable, and permanent in order for U.S. EPA to approve the emission reduction as part of the Plan.

There are key components required of a SIP submittal in order to rely on discretionary incentive programs to satisfy the CAA emission reduction requirements.

The components include a demonstration satisfying "integrity elements," an enforceable commitment, technical support, funding, legal authority, public disclosure and provisions to track results in accordance with the U.S. EPA's economic incentive programs (EIP) guidelines.[3] The following lists the necessary elements that will be included in each of the incentive measures:

- **Integrity Elements**
- **Commitment (Federal Enforceability)**
- **Technical Analyses**
- **Funding**
- **Resources**
- **Outreach and Public Disclosure**
- **Legal Authority**

Details regarding each of these necessary elements can be found in Appendix IV-A.

This category includes one proposed incentive-based measure for additional enhancements in building energy use. This measure may exclusively rely on incentives to achieve NOx reductions from the corresponding emission sources.

[3] References:

- "Guidance on Incorporating Voluntary Mobile Source Emission Reduction Programs in State Implementation Plans (SIPs)," October 24, 1997.
- "Improving Air Quality with Economic Incentive Programs," January 2001.
- "Guidance on SIP Credits for Emission Reductions from Electric-Sector Energy Efficiency and Renewable Energy Measures," August 5, 2004.
- "Incorporating Emerging and Voluntary Measure in a State Implementation Plan (SIP)," October 4, 2004.
- "Guidance on Incorporating Bundled Measures in a State Implementation Plan," August 16, 2005.
- "Roadmap for Incorporating Energy Efficiency/Renewable Energy Policies and Programs into State and Tribal Implementation Plans," July 2012.
- "Diesel Retrofits: Quantifying and Using Their Emission Benefits in SIPs and Conformity: Guidance for State and Local Air and Transportation Agencies," February 2014.

ECC-03 – ADDITIONAL ENHANCEMENTS IN REDUCING EXISTING RESIDENTIAL BUILDING ENERGY USE: This control measure would seek to provide incentives to go beyond the goals within ECC-02 and CMB-02. Incentive programs would be developed for existing residences that include weatherization, upgrading older appliances with highly efficient technologies and renewable energy sources to reduce energy use for water heating, lighting, cooking and other large residential energy sources. Incorporating newer, efficient appliance technologies, weatherization measures along with renewables such as solar thermal and solar photovoltaics can provide emission reductions within the residential sector above current SCAQMD and state regulations along with reduced energy costs. When implementing this measure the SCAQMD will collaborate with utilities, agencies, and other organizations to help leverage funding and coordinate incentives with similar existing programs. This measure will also track the requirements of the upcoming Title 24 Zero Net Energy for new residential energy building standards. SCAQMD will begin to participate in this development process to advocate for criteria and GHG emission consideration in the new standards.

Other Measures

There are three proposed measures in this category. One measure seeks improved education and public outreach. The next measure proposes breakdown limitations to be consistent with federal requirements. The third measure involves implementation of all feasible measures for stationary sources consistent with State law.

FLX-01 – IMPROVED EDUCATION AND PUBLIC OUTREACH: This proposed control measure seeks to provide education, outreach, and incentives for consumers and businesses to contribute to clean air efforts. Examples include consumer choices such as the use of energy efficient products, new lighting technology, "super-compliant" coatings, tree planting, and the use of lighter colored roofing and paving materials, which reduce energy usage by lowering the ambient temperature. In addition, this proposed measure intends to increase the effectiveness of energy conservation programs through public education and awareness as to the environmental and economic benefits of conservation. Educational and incentive tools to be used include social comparison applications (comparing your personal environmental impacts with other individuals), social media, and public/private partnerships.

This control measure is a voluntary program that provides education and outreach to consumers, business owners, and residences regarding the benefits of making clean air choices in purchases, conducting efficiency upgrades, installing clean energy sources, and approaches to conservation. These efforts will be complemented with currently available incentive programs and developing additional incentive programs. Lastly, the SCAQMD staff may develop an EIP to offer technical and financial assistance to help implement efficiency measures and other low emission technologies.

MCS-01 – IMPROVED BREAKDOWN PROCEDURES AND PROCESS RE-DESIGN: SCAQMD Rule 430 applies to breakdowns that result in a violation of any rule or permit condition, with some exceptions. U.S. EPA's May 2015 final action on startups, shutdowns, and malfunctions (SSM) stipulates that exemptions from emission limits during periods of breakdown are not allowed. This control measure would introduce breakdown limits and procedures and potential process re-designs that would apply to breakdowns from all emission sources, providing pollutant concentration or emission limits to comply with U.S. EPA's SSM policy, as applicable.

MCS-02 – APPLICATION OF ALL FEASIBLE MEASURES: This control measure is to address the state law requirement for all feasible measures for ozone. Existing rules and regulations for pollutants such as VOC, NOx, SOx and PM reflect current BARCT. However, BARCT continually evolves as new technology becomes available that is feasible and cost-effective. The SCAQMD staff will continue to review new emission limits or controls introduced through federal, state or local regulations to determine if SCAQMD regulations remain equivalent or more stringent than rules in other regions. If not, a rulemaking process will be initiated to perform a BARCT analysis with potential rule amendments if deemed feasible. In addition, the SCAQMD will consider adopting and implementing new retrofit technology control standards, based on research and development and other information, that are feasible and cost-effective.

Corresponding VOC Reductions from NOx and PM Measures

The following four measures recognize corresponding VOC reductions from other measures designed to achieve NOx and NH3 reductions.

ECC-02 – CO-BENEFITS FROM EXISTING RESIDENTIAL AND COMMERCIAL BUILDING ENERGY EFFICIENCY MEASURES: This control measure would seek to account for criteria pollutant co-benefits from the implementation of required energy efficiency mandates such as California's Title 24 program and SB 350 (Clean Energy Pollution Reduction Act). The 2020 target for Title 24 will be to achieve Zero Net Energy from new residential buildings utilizing new building materials and more efficient appliances. SB 350 doubles the additional achievable energy efficiency savings in electricity and natural gas energy uses in existing buildings and increases renewable energy sources as a share of a utility's power sources from 33 to 50 percent by 2030. This control measure will take advantage of the co-benefit VOC emission reductions from implementation of these state regulations.

ECC-03 – ADDITIONAL ENHANCEMENTS IN REDUCING EXISTING RESIDENTIAL BUILDING ENERGY USE: This control measure would seek to provide incentives to go beyond the goals within ECC-02 and CMB-02. Incentive programs would be developed for existing residences that include weatherization, upgrading older appliances with highly efficient technologies and renewable energy sources to reduce energy use for water heating, lighting, cooking and other large residential energy sources. Incorporating newer, efficient appliance technologies, weatherization measures along with renewables such as solar thermal and solar photovoltaics can provide emission reductions within the residential sector above current SCAQMD and state regulations along with reduced energy costs. The SCAQMD will participate in the Title 24 residential Zero Net Energy rulemaking to advocate for criteria pollutant and GHG emissions consideration.

CMB-01 – TRANSITION TO ZERO AND NEAR-ZERO EMISSION TECHNOLOGIES FOR STATIONARY SOURCES: This proposed control measure would seek corresponding VOC reductions from NOx-focused measures addressing traditional combustion sources by replacement with zero and near-zero emission technologies including low NOx emitting equipment, electrification, battery storage, alternative process changes, efficiency measures, or fuel cells for CHP. Replacing older higher-emitting equipment with newer lower or zero-emitting equipment can apply to a single source or an entire facility. These sources include, but are not limited to, engines, turbines, microturbines, and boilers that generate power for electricity for distributed generation, facility power, process heating, and/or steam production. Another type of combustion source identified for equipment replacement includes ovens, kilns, and furnaces.

New businesses can be required or incentivized to install and operate zero-emission equipment, control equipment, technology and processes beyond the current BACT requirements. Fuel cells are also an alternative to traditional combustion methods, resulting in a reduction of NOx emissions with the co-benefit of reducing VOCs and GHGs. Incentives may be used towards alternative process changes, such as biogas cleanup. This would help modernize a facility towards zero and near-zero technologies. This control measure would also seek energy storage systems and smart grid control technologies that provide a flexible and dispatchable resource with zero emissions. Grid based storage systems can replace the need for new peaking generation, be coupled with renewable energy generation, and reduce need for additional energy infrastructure. Mechanisms will be explored to incentivize businesses to choose the cleanest technologies as they replace equipment and upgrade facilities, and to provide incentives to encourage businesses to move into these zero and near-zero emission technologies sooner. Over the anticipated timeline of this Plan, as emerging technologies become more widely available and costs decline, the SCAQMD will undergo rulemaking to require zero emission equipment be installed where economically feasible, and require near-zero emissions levels in all other applications.

CMB-03 – EMISSION REDUCTIONS FROM NON-REFINERY FLARES: Flare NOx emissions are regulated through NSR and BACT, but there are currently no source-specific rules regulating NOx emissions from existing flares at non-refinery sources, such as organic liquid loading stations, tank farms, and oil and gas production, landfills and wastewater treatment facilities. This control measure proposes that, consistent with the all feasible control measures, all non-refinery flares meet current BACT for NOx emissions and thermal oxidation of VOCs. The preferred method of control would involve capturing the gas that would typically be flared and converting it into an energy source (e.g., transportation fuel, fuel cells, facility power generation). If gas recovery is not cost-effective or feasible, the installation of newer flares utilizing clean enclosed burner systems implementing BACT will be considered.

BCM-10 – EMISSION REDUCTIONS FROM GREENWASTE COMPOSTING: VOCs and ammonia, which are PM precursor gases, are emitted from composting of organic waste materials including greenwaste and foodwaste and are currently regulated by existing SCAQMD Rule 1133.3. Although Rule 1133.3 covers foodwaste composting, the level of emissions from foodwaste composting has not been fully characterized, mainly due to the lack of related emissions test data. This control measure proposes potential emission minimization through emerging organic waste processing technology and potential emission reductions through restrictions on the direct land application of chipped and ground uncomposted greenwaste and through increased diversion to anaerobic digestion. This proposed control measure includes a 15-day pathogen reduction process of chipped and ground uncomposted greenwaste with composting best management practices (BMPs) to reduce potential VOC and ammonia emissions from land applied greenwaste.

Limited, Strategic VOC Control

This category seeks limited, strategic VOC controls that contribute to controlling ozone levels in the Basin. The first measure utilizes more advanced, fugitive VOC leak detection systems. The second measure targets limited reductions of VOC emissions from VOC-containing products such as coatings, solvents, adhesives, and lubricants, or utilization of alternative products/equipment. The last measure proposes to incentivize efficient clean equipment purchases, efficiency projects, and conservation techniques that lead to VOC and other emission reductions.

FUG-01 – IMPROVED LEAK DETECTION AND REPAIR: This control measure seeks to reduce emissions from a variety of VOC emission sources including, but not limited to, oil and gas production facilities, petroleum refining and chemical products processing, storage and transfer facilities, marine terminals, and other sources, where VOC emissions occur from fugitive leaks in piping components, wastewater system components, and process and storage equipment leaks. Most of these facilities are required under SCAQMD and federal rules to maintain a leak detection and repair (LDAR) program that involves individual screening of all of their piping components and periodic inspection programs of equipment to control and minimize VOC emissions. This measure would utilize advanced remote sensing techniques (Smart LDAR), such as Fourier transform infrared spectroscopy (FTIR), Ultraviolet Differential Optical Absorption Spectroscopy (UV-DOAS), Solar Occultation Flux (SOF), and infrared cameras, that can identify, quantify, and locate VOC leaks in real time allowing for faster repair in a manner that is less time consuming and labor intensive than traditional LDAR.

This control measure would pursue two goals. The first is to upgrade a series of SCAQMD's inspection/maintenance rules (Rules 462, 1142, 1148.1, 463, 1178, 1173, and 1176) to require, at a minimum, a self-inspection program, or utilization of an optical gas imaging-assisted LDAR program where feasible. The second is to explore the use of new technologies to detect and verify VOC fugitive emissions in order to supplement existing programs, explore opportunities where Smart LDAR might substitute for existing LDAR programs, and achieve additional emission reductions. Both goals will be pursued in a public process allowing interested stakeholders to participate in pilot projects and the rule development process.

For new detection technology this control measure will be implemented in two phases: Phase I will be a pilot LDAR program to demonstrate feasibility with the new technology and to establish implementation protocols. The completion of Phase I will result in the identification of facilities/industries currently subject to LDAR programs and identification of those where the new technology is not yet ready to be utilized. Based on the results of Phase I, fugitive VOC rules will be amended as appropriate under the subsequent phase (Phase II) to enhance their applicability and effectiveness, and to further achieve emission reductions.

CTS-01 – FURTHER EMISSION REDUCTIONS FROM COATINGS, SOLVENTS, ADHESIVES, AND SEALANTS: This control measure seeks limited VOC emission reductions by focusing on select coating, adhesive, solvent and sealant categories by further limiting the allowable VOC content in formulations or incentivizing the use of super-compliant technologies. Examples of the categories to be considered include, but are not limited to, coatings used in aerospace applications, adhesives used in a variety of sealing applications, and solvents for graffiti abatement activities. Reductions could be achieved by lowering the VOC content of a few categories within SCAQMD source-specific Rules 1106, 1106.1, 1107,, 1124, 1128, 1136, 1143, 1168, and 1171 where possible, especially where the majority of products already meet lower limits. For Rule 1113, where annual quantity and emissions reporting is required under Rule 314, SIP credit for market-driven reductions could be pursued in categories where many coatings are already formulated below current VOC limits. For solvents, reductions could be achieved by promoting the use of alternative low-VOC products or non-VOC product/equipment at industrial facilities. Particular VOC reductions that lead to the increased use of chemicals that are known or suspected to be toxic should be avoided until it can be demonstrated that these replacement products do not lead to

increased toxic risk for workers or the general public. The tightening of regulatory exemptions can also lead to reduced emissions across multiple use categories.

FLX-02 – STATIONARY SOURCE VOC INCENTIVES: This control measure seeks to incentivize VOC emission reductions from various stationary sources through incentive programs for the use of clean, low VOC emission technologies. Facilities would be able to qualify for incentive funding if they utilize equipment or accept permit conditions which result in cost-effective emission reductions that are beyond existing requirements. The program would establish procedures for quantifying emission benefits from clean technology implementation and develop cost-effectiveness thresholds for funding eligibility. Mechanisms will be explored to incentivize businesses to choose the cleanest technologies as they replace equipment and upgrade facilities, and to provide incentives to encourage businesses to move into these technologies sooner. For stationary sources, the SCAQMD staff has compiled an initial list of potential incentives to encourage businesses to use zero- or near-zero technologies or enhancements to the SCAQMD's existing programs to reduce or eliminate barriers to implement state of the art technologies. Potential incentive concepts include incentive funding, permitting and fee incentives and enhancements, New Source Review (NSR) incentives and enhancements, branding incentives, and recordkeeping and reporting incentives. The SCAQMD staff is committed to further investigating these concepts.

SCAQMD Proposed Mobile Source 8-Hour Ozone Measures

SCAQMD staff analyzed the need to accelerate the penetration of cleaner engine technologies and assist in implementing CARB's proposed State SIP strategy. Specifically, there are several measures under the proposed State SIP strategy that are titled "Further Deployment of Cleaner Technologies" (see Appendix IV-B), which identifies the SCAQMD as an implementing agency along with CARB and U.S. EPA. CARB indicated that the implementation of the "Further Deployment" measures is based on a combination of incentive funding, development of regulations, and quantification of emission reduction benefits from operational efficiency actions and deployment of autonomous vehicles, connected vehicles, and intelligent transportation systems. The SCAQMD has proposed mobile source measures to help implement CARB's "Further Development" measures. In addition, the SCAQMD is implementing several incentives funding programs that have resulted in early emission reductions (e.g., the Carl Moyer Memorial Air Quality Standards Attainment Program, the Surplus Off-Road Opt-In for NOx (SOON) program, and Proposition 1B – Goods Movement Emissions Reduction Program). The emission reduction benefits of the funding programs are quantified and are proposed to be included as part of the overall emission reductions for attainment of the NAAQS.

The proposed SCAQMD mobile source measures are based on a variety of control technologies that are commercially available and/or technologically feasible to implement in the next several years. The focus of these measures includes accelerated retrofits or replacement of existing vehicles or equipment, acceleration of vehicle turnover through voluntary vehicle retirement programs, and greater use of cleaner fuels in the near-term. The measures will encourage greater deployment of zero-emission vehicle and equipment technologies such as plug-in hybrids, battery-electric, and fuel cells to the maximum extent feasible as such technologies are commercialized and near-zero emission technologies everywhere else. In the longer-term, there is a need to significantly increase the penetration and deployment of near-zero and zero-emission vehicles , greater use of cleaner, renewable fuels (either

alternative fuels or new formulations of gasoline and diesel fuels), and additional emission reductions from federal and international sources such as locomotives, ocean-going vessels, and aircraft.

In implementing the SCAQMD mobile source measures, the SCAQMD will focus on collaborative approaches to achieve additional emission reductions to help implement the proposed State SIP Strategy "Further Deployment" measures. During the public process (which is for all intents and purposes, the SCAQMD process used to develop rules to implement the AQMP control measures), SCAQMD staff will assess the progress in identifying actions (voluntary and regulatory) that will result in additional emission reductions. SCAQMD staff will report to the Governing Board on progress on a routine basis, but no later than six months after the adoption of the Final 2016 AQMP. If progress is not made in identifying specific actions within one year of adoption of the Final 2016 AQMP, the SCAQMD staff will recommend to the Governing Board whether to consider proceeding with the development of rules within its existing legal authority or seek additional authority to adopt and implement measures. Such authority includes development of new or expanded clean vehicle fleet rules or indirect source regulations. Table 4-3 provides a schedule for the public process, which includes periodic progress reports to the SCAQMD Mobile Source Committee, convening working groups, and milestones to achieve during the one year period.

TABLE 4-3

Schedule and Milestones for the Mobile Source Measure Public Process

Public Process Activity	Time from Final Approval of the 2016 AQMP
Report to SCAQMD Mobile Source Committee on Process to move forward	• Within One Month
Convene Working Groups for MOB-01 through MOB-05 and EGM-01	• Within One Month
Working Group Meeting • **Define Objectives** • **Seek initial input on the types of actions with potential criteria pollutant reductions** • **Identify existing actions with potential emission reductions** • **Develop model quantification methodologies for emission reductions associated with identified actions** • **Identify future actions with potential emission reductions** • **Quantify potential emission reductions** • **Develop mechanisms to ensure reductions are real, surplus, and enforceable**	• Ongoing on a Monthly Basis
Report to SCAQMD Mobile Source Committee on progress	• Six Months

TABLE 4-3 (concluded)

Schedule and Milestones for the Mobile Source Measure Public Process

Public Process Activity	Time from Final Approval of the 2016 AQMP
Report to SCAQMD Mobile Source Committee/Governing Board on progress and whether to continue with process or recommend formal rule development	• 12 Months

A total of 15 measures are proposed as actions to reduce mobile source emissions. One measure is proposed to identify actions to help mitigate and potentially provide emission reductions due to new development and redevelopment projects. Four measures seek to identify actions that will result in additional emission reductions at commercial marine ports, rail yards and intermodal facilities, warehouse distribution centers, and commercial airports to help meet the emission reductions associated with the State SIP Strategy "Further Deployment" measures for on-road heavy-duty vehicles, off-road equipment, and federal and international sources. Five measures focus on on-road mobile sources and four measures focus on off-road mobile sources. Lastly, one measure seeks to recognize the criteria pollutant emission reduction benefits of existing incentives programs such as the Carl Moyer Memorial Air Quality Standards Attainment Program and Proposition 1B – Goods Movement Emission Reduction Program. The measures call for greater emission reductions through accelerated turnover of older vehicles to the cleanest vehicles and equipment currently available and increased penetration of commercially-available near-zero and zero-emission technologies through incentives programs in the near-term. In the longer-term, CARB will identify potential regulatory actions that will lead to additional emission reductions and greater deployment of zero-emission vehicle technologies everywhere feasible and cost-effective.

Partial-zero and zero-emission technologies are rapidly being introduced into the on-road light- and medium-duty vehicle categories in large part due to the CARB Advanced Clean Car Program, which includes the Low Emission Vehicle (LEV) and the Zero-Emission Vehicle (ZEV) Regulations. In addition, next-generation electric hybrid trucks are being commercialized for light-heavy and medium-heavy heavy-duty on-road vehicles. However, additional research and demonstration are needed to commercialize zero- and near-zero emission technologies for the heavier heavy-duty vehicles (with gross vehicle weight ratings greater than 26,000 pounds).

For many of the off-road mobile sources such as cargo handling equipment, commercial harbor craft, and off-road equipment, some form of "all zero-emission range" or hybridization is being demonstrated and deployment of these technologies is expected to begin over the next few years. For other sectors such as locomotives, marine vessels and aircraft, the development of cleaner combustion technologies beyond existing emission standards will be needed as provided in the State SIP Strategy. The 2016 AQMP White Papers covering Passenger Transportation, Goods Movement, and Off-Road Equipment provide a general discussion on the need for new emission standards and development of cleaner combustion technologies. In addition, CARB's Technology Assessment documents provide in-depth evaluation of current emissions control technologies and the state of development/commercialization of zero- and near-zero advanced technologies. A summary of the 15 measures is provided in Table 4-4.

TABLE 4-4

SCAQMD Proposed Mobile Source 8-Hour Ozone Measures

Number	Title	Adoption	Implementation Period	Implementing Agency	Emission Reductions (tpd) (2023/2031)
Emission Growth Management Measure:					
EGM-01	Emission Reductions from New Development and Redevelopment Projects [All Pollutants]	2018	2019–2031	SCAQMD	TBD [a]
Facility-Based Mobile Source Measures:					
MOB-01	Emission Reductions at Commercial Marine Ports [NOx, SOx, PM]	2018	2019–2031	SCAQMD	TBD [b]
MOB-02	Emission Reductions at Rail Yards and Intermodal Facilities [NOx, PM]	2018	2019–2031	SCAQMD	TBD
MOB-03	Emission Reductions at Warehouse Distribution Centers [All Pollutants]	2018	2019–2031	SCAQMD	TBD
MOB-04	Emission Reductions at Commercial Airports [All Pollutants]	2018	2019–2031	SCAQMD	TBD [b]
On-Road Mobile Source Measures:					
MOB-05	Accelerated Penetration of Partial Zero-Emission and Zero-Emission Vehicles [VOC, NOx, CO]	N/A	Ongoing	CARB, SCAQMD	TBD [a]
MOB-06	Accelerated Retirement of Older Light-Duty and Medium-Duty Vehicles [VOC, NOx, CO]	N/A	Ongoing	CARB, Bureau of Automotive Repair, SCAQMD	TBD [a]
MOB-07	Accelerated Penetration of Partial Zero-Emission and Zero-Emission Light-Heavy- and Medium-Heavy-Duty Vehicles [NOx, PM]	N/A	Ongoing	CARB, SCAQMD	TBD [a]
MOB-08	Accelerated Retirement of Older On-Road Heavy-Duty Vehicles [NOx, PM]	2018	2019–2031	CARB, SCAQMD	TBD [a]
MOB-09	On-Road Mobile Source Emission Reduction Credit Generation Program [NOx, PM]	2018	2019–2027	CARB, SCAQMD	TBD [a]

TABLE 4-4 (CONCLUDED)

SCAQMD Proposed Mobile Source 8-Hour Ozone Measures

Number	Title	Adoption	Implementation Period	Implementing Agency	Emission Reductions (tpd) (2023/2031)
Off-Road Mobile Source Measures:					
MOB-10	Extension of the SOON Provision for Construction/Industrial Equipment [NOx]	N/A	Ongoing	SCAQMD	2.0 / 2.0
MOB-11	Extended Exchange Program [VOC, NOx, CO]	N/A	Ongoing	SCAQMD	2.9 / 1.0 [NOx]
MOB-12	Further Emission Reductions from Passenger Locomotives [NOx, PM]	Ongoing	Beginning 2017–2023	SoCal Regional Rail Authority	TBD [b]
MOB-13	Off-Road Mobile Source Emission Reduction Credit Generation Program [NOx, SOx, PM]	2018	2019–2027	SCAQMD	TBD [a]
Incentive Programs Measure:					
MOB-14	Emission Reductions from Incentive Programs [NOx, PM]	N/A	2016–2024	SCAQMD	11 / 7.8 [NOx]

[a] Emission reductions will be determined after projects are identified and implemented

[b] Submitted into the SIP as part of Rate-of-Progress reporting or in baseline inventories for future AQMP/SIP Revisions

The following text provides a brief description of the SCAQMD staff's proposed mobile source control measures:

Emission Growth Management Measure

There is one proposed control measure within this category. The measure addresses emission reductions from new or redevelopment projects. The SCAQMD will encourage developers and local agencies to identify actions that will result in mitigation of new criteria pollutant emissions and potentially further reduce criteria pollutant emissions from affected projects.

EGM-01 – EMISSION REDUCTIONS FROM NEW OR REDEVELOPMENT PROJECTS: Since San Joaquin Valley Air Pollution Control District Rule 9510 has been approved by U.S. EPA to be included in the SIP for the San Joaquin Valley, the SCAQMD must consider Rule 9510 under the "all feasible measures" requirement of state law. As such, the applicability of Rule 9510 in the South Coast Air Basin and

Coachella Valley will be evaluated. The proposed measure seeks to capture emission reduction opportunities during the project development phase and opportunities to enable greater deployment of zero and near-zero emission technologies. The SCAQMD will reconvene the working group made up of stakeholders from industry, local governments, and community representatives as part of the rulemaking process. The working group will provide input and comments and help identify actions that potentially result in emission reductions to mitigate any new emissions or further reduce emissions. As part of the public process, the SCAQMD staff will evaluate the need to develop a rule or other enforceable mechanisms to ensure that the emission reductions are real, surplus, quantifiable, and enforceable as defined by U.S. EPA if the emission reductions are proposed to be included in the SIP.

Facility-Based Mobile Source Measures

With economic growth projected out to 2040 by SCAG, there may be a potential increase in emissions associated with mobile sources in the goods movement sector even with the deployment of newer, cleaner vehicles and equipment. As such, four facility-based mobile source control measures are proposed. The first measure focuses on commercial marine ports in the Basin. Port-related emission sources include on-road heavy-duty trucks, locomotives, ocean-going vessels, commercial harbor craft, and cargo handling equipment. The Ports of Los Angeles and Long Beach (Ports) have been implementing the San Pedro Bay Ports Clean Air Action Plan (CAAP) since 2006. Implementation of strategies under the CAAP has led to early emission reductions as state, federal, and international regulations are developed. The Ports are in the process of updating the CAAP to implement long-term sustainable strategies that could potentially result in criteria pollutant and greenhouse gas emission reductions, while improving operational efficiencies and reducing dependence on fossil-based fuels. To the extent that criteria pollutant emission reductions associated with such actions can be quantified, a mechanism will be developed that recognizes the actions and credits the associated emission reductions into the SIP.

The second measure focuses on mobile source related vehicles and equipment operating in rail yards and intermodal facilities in the Basin. Such vehicles and equipment include cargo handling equipment, locomotives, on-road heavy-duty trucks, and passenger cars. The third and fourth measures focus on warehouse distribution centers and commercial airports. An approach similar to the marine ports measure will be taken to quantify criteria pollutant emission reductions associated with activities occurring at these facilities.

As part of the public process in implementing the four measures, the SCAQMD staff will be assessing the progress in identifying and quantifying emission reductions that are anticipated to occur at the various facilities. As part of the public process, the SCAQMD staff will evaluate the need for rule development to achieve additional emission reductions and report to the SCAQMD Governing Board six months after the Plan adoption on the progress of implementing the four measures. If after one year (from the date of adoption of the Final 2016 AQMP), voluntary actions or from CARB (since these measures are to help implement CARB's "Further Development" measures) or U.S. EPA are not identified to any significant extent or identified actions do not result in emission reductions in a timely manner to meet federal air quality standards, the SCAQMD staff will recommend that the SCAQMD Governing Board consider regulatory approaches or other enforceable mechanisms to achieve the emission reductions from the mobile source sectors associated with the various facilities.

MOB-01 – EMISSION REDUCTIONS AT COMMERCIAL MARINE PORTS: The Ports have been implementing the CAAP since 2006 and is currently in the process of updating the CAAP. The Ports have been successful for the most part in implementing the CAAP and have exceeded emission reduction goals set in the CAAP. The CAAP update has the potential to assist the region in attaining air quality standards in a timely manner. Many of the actions that have been implemented in the CAAP are voluntary in nature since these reductions are not committed in the SIP. Over time, these actions have been subsumed through regulatory actions by CARB, U.S. EPA, or international entities such as the International Maritime Organization (IMO). Regardless, the actions have led to early emission reductions. The Ports are in a unique position to work with their tenants (terminal and railroad operators) to develop strategies to further reduce emissions. This measure seeks to quantify the emission reductions realized from the CAAP and credit the reductions into the SIP to the extent that these actions are real and surplus to the existing SIP. Emission reductions that occurred through the identified actions as reported by the Ports on an annual basis will be incorporated in the revised baseline emissions as part of the SIP revision process (either as part of the Rate-of-Progress reporting requirements of the CAA or reflected in new baseline emissions inventory for future AQMP/SIP revisions). Since many of these actions are voluntary in nature, any emission reductions credited towards attainment of the federal air quality standards must contain an enforceable commitment that the emission reductions remain real and permanent (as defined by U.S. EPA) if for some reason the emission reductions are not maintained after they are reported into the SIP. As such, the enforceable commitment may be in the form of a regulation by the SCAQMD within its existing legal authority, or by the state or federal government, or other enforceable mechanisms. Regardless, the types of enforceable commitments will be developed through a public process. The proposed measure will replace control measures MOB-03 in the 2007 AQMP and IND-01 in the 2012 AQMP since the emission reductions associated with these measures have been achieved either through regulations adopted by CARB or U.S. EPA. Relative to control measure IND-01 from the 2012 AQMP, the 24-hour PM2.5 air quality standard was not attained in 2014. However, the emission reduction targets provided in IND-01 have already been met.

MOB-02 – EMISSION REDUCTIONS AT RAIL YARD AND INTERMODAL FACILITIES: The goal of this measure is to assess and identify potential actions to further reduce emissions associated with mobile sources operating in and out of rail and intermodal yards. The SCAQMD staff will convene a stakeholder working group to discuss and identify actions or approaches to further reduce emissions at rail yards and intermodal facilities. The identified actions can be voluntary or regulatory or other enforceable mechanisms adopted by local, state, or federal governmental agencies. To the extent that these actions are voluntary in nature and are sustained over a long-term basis and the emission reduction levels are maintained, the emission reductions may be credited as surplus reductions (as defined by the U.S. EPA) into the SIP. If emission reductions are to be included in the SIP, enforceable commitments to ensure that the emissions are permanent will need to be made and may be in the form of a regulation adopted by the SCAQMD within its legal authority or by other enforceable mechanisms.

MOB-03 – EMISSION REDUCTIONS AT WAREHOUSE DISTRIBUTION CENTERS: The goal of this measure is to assess and identify potential actions to further reduce emissions associated with emission sources operating in and out of warehouse distribution centers. The SCAQMD is currently working with industry stakeholders on conducting in-use truck trip studies and obtaining emissions information from various warehouse distribution types. This information along with emissions occurring in and around individual warehouse distribution centers will serve as the basis for seeking opportunities to reduce emissions

beyond existing requirements. A stakeholder working group will be convened to discuss warehouse emissions related issues and provide input and comments on identifying actions that will result in further emission reductions. To the extent that these actions are voluntary in nature and are sustained over a long-term basis and the emission reduction levels are maintained, the emission reductions may be credited as surplus reductions (as defined by the U.S. EPA) into the SIP. If emission reductions are to be included in the SIP, enforceable commitments to ensure that the emissions are permanent will need to be made and may be in the form of a regulation adopted by the SCAQMD within its legal authority or by other enforceable mechanisms.

MOB-04 – EMISSION REDUCTIONS AT COMMERCIAL AIRPORTS: Due to projected increases in airline passenger transportation and expansion of operations at various commercial airports, potential increases in emissions may result unless the increased emissions are fully mitigated. Several airport authorities are implementing emissions mitigation measures, while other airports have initiated actions that can lead to additional emission reductions. This measure seeks to quantify such actions and identify additional actions that can lead to additional emission reductions to assist in attainment of federal air quality standards and reduce local exposure to air toxic emissions. Quantified emission reductions that are real, surplus, permanent, and enforceable will be reflected in future emissions inventories as part of the Rate-of-Progress reporting requirements or in baseline emission inventories as part of future AQMP/SIP development. In addition, such emission reductions can be used for general conformity purposes. A working group will be convened with affected stakeholders to discuss airport emissions related issues and provide input to identify actions and develop mechanisms to implement this measure. To the extent that the identified actions are voluntary in nature and are sustained over a long-term basis and the emission reduction levels are maintained, the emission reductions may be credited as surplus reductions (as defined by the U.S. EPA) into the SIP. If emission reductions are to be included in the SIP, enforceable commitments to ensure that the emissions are permanent will need to be made and may be in the form of a regulation adopted by the SCAQMD within its legal authority or by other enforceable mechanisms. This measure seeks to undertake a stakeholder process and draft for Governing Board consideration an indirect source rule for commercial airports within the South Coast Basin by February 1, 2019 to control emissions of NOx, PM2.5, lead, and diesel particulate matter from non-aircraft sources.

On-Road Mobile Source Measures

Five on-road mobile source control measures are proposed. The first two measures focus on on-road light- and medium-duty vehicles operating in the Basin. It is estimated that around 12 million registered vehicles will be operating in the Basin. The first measure would implement programs to accelerate the penetration and deployment of partial zero-emission and zero-emission vehicles in the light- and medium-duty vehicles categories. The second control measure would seek to accelerate retirement of older gasoline and diesel powered vehicles up to 8,500 pounds gross vehicle weight (GVW). These vehicles include passenger cars, sports utility vehicles, vans, and light-duty pick-up trucks.

The remaining three measures focus on heavy-duty vehicles. The first of these measures seeks additional emission reductions from the early deployment of partial zero-emission and zero-emission light- and medium-heavy-duty vehicles with gross vehicle weights between 8,501 pounds to 26,000 pounds. The second control measure for heavy-duty vehicles seeks additional emission reductions from older, pre-2010 heavy-duty vehicles beyond the emission reductions targeted in CARB's Truck and Bus

Regulation. Additional emission reductions beyond the compliance requirements of the Truck and Bus Regulation could be achieved as affected fleets purchase trucks with engines that meet an optional NOx emissions standard to replace their existing heavy-duty vehicles. In addition, fleets or trucks that are not subject to the Truck and Bus Regulation would be targeted through incentives or through regulatory actions that are within the SCAQMD's legal authority such as the SCAQMD Rule 1190 series of clean fleet vehicle rules, to purchase trucks with engines meeting an optional NOx emissions standard. The third measure will seek to accelerate the introduction of zero- and near-zero emission on-road heavy-duty trucks through mobile source emission reduction credits generating programs. SCAQMD Rules 1612 and 1612.1 have been in place since 1995 and 2001, respectively. However, the current versions of the rules need to be updated to reflect heavy-duty vehicle technologies available today and in the near-future. Mobile source emission reduction credits generated under these rules would only be available to help facilities affected by the facility-based measures (MOB-01 through MOB-04 and EGM-01). The credits are proposed to not be eligible for offset stationary source emissions.

MOB-05 – ACCELERATED PENETRATION OF PARTIAL ZERO-EMISSION AND ZERO-EMISSION VEHICLES: This measure proposes to continue incentives for the purchase of zero-emission vehicles and hybrid vehicles with a portion of their operation in an "all-electric range" mode. The State Clean Vehicle Rebate Pilot (CVRP) program is proposed to continue from 2016 to 2030 with proposed funding up to $5,000 per vehicle and for low-income eligible residents, additional funding of up to $1,500 for a total of $6,500 per vehicle. The California State legislature has appropriated $133 million statewide for the CVRP for Fiscal Year 2016–17. The proposed measure seeks to provide funding rebates for at least 15,000 zero-emission or partial-zero emission vehicles per year.

MOB-06 – ACCELERATED RETIREMENT OF OLDER LIGHT-DUTY AND MEDIUM-DUTY VEHICLES: This proposed measure calls for promoting the permanent retirement of older eligible vehicles through financial incentives currently offered through local funding incentive programs, and AB 118 Enhanced Fleet Modernization Program (EFMP), and the Greenhouse Gas Reduction Fund (EFMP Plus-Up). The proposed measure seeks to retire up to 2,000 older light- and medium-duty vehicles (up to 8,500 pounds GVW) per year. Funding incentives of up to $4,500 per vehicle are available to low- and moderate-income residents for the scrapping of the vehicle, which includes a replacement voucher for a newer cleaner conventional powered vehicle, plug-in hybrid electric or dedicated zero-emission vehicle. For low- and moderate-income residents living in a disadvantaged community, additional funding of up to $5,000 is available for a fuel efficient conventional powered vehicle, plug-in hybrid electric vehicle or dedicated zero-emission vehicle. The proposed measure seeks to provide funding assistance for at least 2,000 replacement vehicles per year.

MOB-07 – ACCELERATED PENETRATION OF PARTIAL ZERO-EMISSION AND ZERO-EMISSION LIGHT-HEAVY- AND MEDIUM-HEAVY-DUTY VEHICLES: The objective of the proposed action is to accelerate the introduction of advanced hybrid and zero-emission technologies for Class 4 through 6 heavy-duty vehicles. The State is currently implementing a Hybrid Vehicle Incentives Project (HVIP) program to promote zero-emission and hybrid heavy-duty vehicles and CARB is proposing to allocate $18 million statewide to the program. The proposed measure seeks to continue the program from 2016 to 2030 to deploy up to 120 zero- and partial-zero emission vehicles per year with up to $50,000 funding assistance per vehicle based on the current allocated funding (funding levels vary depending on technology types). Zero-emission vehicles and hybrid vehicles with a portion of their operation in an "all-electric range" mode

would be given the highest priority. In addition in 2016, the California state legislature appropriated $150 million from the Greenhouse Gas Reduction Fund to invest in zero and near-zero emission on-road heavy-duty vehicles and off-road equipment. The District staff will seek necessary legislative authority to authorize the SCAQMD to require the accelerated purchase and use of near-zero and zero-emission heavy-duty on-road vehicles for public fleets within the South Coast Basin. The District's fleet rules will be amended to require accelerated purchase and use of near-zero and zero-emission heavy-duty on-road public vehicles within the South Coast Basin no later than two years after the SCAQMD obtains any necessary legislative authority to control emissions of NOx, PM2.5, and diesel particulate matter.

MOB-08 – ACCELERATED RETIREMENT OF OLDER ON-ROAD HEAVY-DUTY VEHICLES: This proposed measure seeks to replace up to 2,000 heavy-duty vehicles per year with newer or new vehicles that meet one of the optional NOx standards adopted by CARB. The funding assistance will be prorated to offer the most funding for heavy-duty engines meeting the optional NOx exhaust emissions standard of 0.02 g/bhp-hr or cleaner. Funding assistance of up to $25,000 per vehicle is proposed and the level of funding will depend upon the NOx emissions certification level of the replacement vehicle meeting one of the optional NOx emission standards. In addition, the SCAQMD may to the extent within its authority, adopt a regulation to require purchase of the cleanest commercially available engine, which may include a provision similar to the Surplus Off-Road Opt-In for NOx (SOON) provision of the Statewide In-Use Off-Road Fleet Vehicle Regulation or develop new or expanded clean fleet vehicle rules, to ensure that additional NOx emission reduction benefits are achieved. Other enforceable mechanisms may be considered providing that such mechanisms can be approved into the SIP. The District staff will seek necessary legislative authority to authorize the SCAQMD to require the accelerated purchase and use of near-zero and zero-emission heavy-duty on-road vehicles for public fleets within the South Coast Basin. The District's fleet rules will be amended to require accelerated purchase and use of near-zero and zero-emission heavy-duty on-road public vehicles within the South Coast Basin no later than two years after the SCAQMD obtains any necessary legislative authority to control emissions of NOx, PM2.5, and diesel particulate matter.

MOB-09 – ON-ROAD MOBILE SOURCE EMISSION REDUCTION CREDIT GENERATION PROGRAM: This proposed measure seeks to accelerate deployment of near-zero and zero-emission on-road heavy-duty trucks through the generation of mobile source emission reduction credits (MSERCs) that can be used for purposes of recognizing mobile source emission reductions at facilities affected by proposed AQMP measures MOB-01 through MOB-04, MOB-08, and EGM-01. The SCAQMD staff will develop amendments to SCAQMD Rules 1612 and 1612.1 to reflect the latest advanced near-zero and zero-emission technologies and revise the quantification methodologies in Rules 1612 and 1612.1. MSERCs generated will be discounted to provide additional benefits to the environment and to help meet air quality standards.

Off-Road Mobile Source Measures

Four control measures are proposed to seek further emission reductions from off-road mobile sources and industrial equipment. The first measure calls for the continuation of the SOON provision of the Statewide In-Use Off-Road Diesel Fleet Regulation beyond 2023. The SOON provision implemented to-date has realized additional NOx reductions beyond the Statewide regulation. The second measure seeks to continue the successful lawnmower and leaf blower exchange programs and expand the

programs to include a greater variety of zero-emission equipment into the commercial lawn and garden maintenance activities. A significant portion of the NOx emissions from lawn and garden equipment are attributed to larger lawn and garden equipment operating on diesel fuel. The extended exchange program will focus on replacing these equipment with newer equipment. The third measure calls for additional emission reductions from passenger locomotives. The Southern California Regional Rail Authority (SCRRA or Metrolink), the region's commuter rail service, is in the process of procuring 40 Tier 4 passenger locomotives. This measure will recognize these efforts and continue the purchase of Tier 4 cleaner locomotives. The fourth measure seeks to accelerate the introduction of zero- and near-zero emission off-road equipment through mobile source emission reduction credits generating programs. SCAQMD Rule 1620 has been in place since 1995. However, the current version of the rule needs to be revised to reflect current off-road equipment technologies available today and the near-future. Mobile source emission reduction credits generated under a new amended Rule 1620 or other off-road mobile source emission reduction credit generation rule would only be available to help facilities affected by the facility-based measures (MOB-01 through MOB-04 and EGM-01). The credits are proposed to not be eligible for offset stationary source emissions.

MOB-10 – EXTENSION OF THE SOON PROVISION FOR CONSTRUCTION/INDUSTRIAL EQUIPMENT: To promote turnover (i.e., retire, replace, retrofit, or repower) of older in-use construction and industrial diesel engines, this proposed measure seeks to continue the SOON provision of the Statewide In-Use Off-Road Fleet Vehicle Regulation beyond 2023 through the 2031 timeframe. Historically, the SCAQMD Governing Board has allocated up to $30 million per year for the program. However, more recently, the Governing Board has allocated up to $10 million per year. This measure proposes to extend the current SOON Program beyond 2023 to 2031 with a minimum allocation of $10 million and potentially higher levels upon the Governing Board's approval. In order to implement the SOON program in this timeframe, funding of up to $30 million per year would be sought to help fund the repower or replacement of older Tier 0 and Tier 1 equipment to Tier 4 or cleaner equipment, with approximately 2 tpd of NOx reductions.

MOB-11 – EXTENDED EXCHANGE PROGRAM: This measure seeks to continue the successful lawnmower and leaf blower exchange programs in order to increase the penetration of electric equipment or new low emission gasoline-powered equipment used in the region. The lawnmower exchange program has resulted in over 55,000 gasoline lawnmowers replaced with zero-emission lawnmowers and over 12,000 older, dirtier gasoline-powered commercial leaf blowers replaced with newer, cleaner leaf blowers. The SCAQMD is currently conducting a lawn and garden equipment loan program with various public entities to demonstrate the feasibility of zero-emission lawn and garden equipment in various public and commercial settings. Such demonstrations will provide valuable information to lawn and garden equipment manufacturers to produce zero-emission products for the commercial environment. A segment of the lawn and garden equipment population comprised of diesel powered equipment represents a significant fraction of the total NOx emissions associated with this category. As such, the proposed extended exchange program will focus on incentives to accelerate the replacement of older equipment with new Tier 4 or cleaner equipment or zero-emission equipment where applicable. In addition, other small off-road equipment (SORE) equipment may also be considered for exchange programs for accelerating the turnover of existing engines.

MOB-12 – FURTHER EMISSION REDUCTIONS FROM PASSENGER LOCOMOTIVES: This measure recognizes recent actions by the SCRRA to replace their existing passenger locomotives with Tier 4 locomotives. The SCRRA is in the process of procuring 40 Tier 4 passenger locomotives to replace their older existing Tier 0 and Tier 2 passenger locomotives by 2020. The SCRRA Board has indicated a desire to work with the SCAQMD and other stakeholders to evaluate technologies that will further reduce NOx emissions beyond Tier 4 emissions level.

MOB-13 – OFF-ROAD MOBILE SOURCE EMISSION REDUCTION CREDIT GENERATION PROGRAM: This measure seeks to accelerate the early deployment of near-zero and zero-emission off-road equipment through the generation of MSERCs that can be used for purposes of recognizing mobile source emission reductions at facilities affected by proposed AQMP measures MOB-01 through MOB-04 and EGM-01. The SCAQMD staff will develop amendments to SCAQMD Rule 1620 to reflect the latest advanced near-zero and zero-emission technologies and revise the quantification methodologies in Rule 1620. In addition to Rule 1620, the SCAQMD staff has been working on two additional off-road mobile source emission reduction credit generation rules to incentivize the early deployment of the cleanest ocean-going vessels that are not subject to the State Vessels At-Berth Regulation or vessel calls that are considered surplus to the Statewide regulation and locomotives that have lower NOx emissions than the current Tier 4 locomotive engine standards. The two rules will be further developed under this measure. MSERCs generated may be discounted to provide additional benefits to the environment and to help meet air quality standards.

Incentive Programs Measure

A measure is proposed to recognize the emission benefits resulting from incentive funding programs such as the Carl Moyer Memorial Air Quality Standards Attainment Program and Proposition 1B. The San Joaquin Valley Air Pollution Control District adopted Rule 9610 to recognize the emission reduction benefits of incentive programs in their region. A similar action is proposed under the current measure. The proposed measure describes the six general elements identified by U.S. EPA that will be needed in order for such benefits to be accounted in the SIP.

MOB-14 – EMISSION REDUCTIONS FROM INCENTIVE PROGRAMS: This measure seeks to develop a rule similar to the San Joaquin Valley Air Pollution Control District Rule 9610 to recognize emission reduction benefits associated with incentive programs. The proposed rule would recognize the emission benefits resulting from incentive funding programs such as the Carl Moyer Memorial Air Quality Standards Attainment Program and Proposition 1B such that the emission reductions can be accounted for in the SIP. As previously mentioned, the U.S. EPA indicated that there are six general elements that need to be incorporated in a proposed rule in order for the reductions to be credited in the SIP. The six necessary elements are the minimal amount of information, documentation, or commitment needed for U.S. EPA to consider approval of emission reduction benefits associated with incentives programs. Additional elements may be identified during the implementation of this measure.

State and Federal Control Measures

In addition to SCAQMD and SCAG measures, the Draft 2016 AQMP includes additional control measures to reduce emissions from sources that are primarily under state and federal jurisdiction, including on-road and off-road mobile sources. These reductions are needed to achieve the remaining emission reductions necessary for ozone and PM2.5 attainment. The CARB released the Proposed 2016 State Strategy for the SIP (State SIP Strategy) on May 17, 2016. The new measures contained in the State SIP Strategy commitment reflect a combination of state actions, petitions for federal action, as well as actions that outline a pathway for achieving further deployment of the cleanest technologies in each sector. These measures, in conjunction with the existing control program, identify all of the reductions needed to achieve a 70 percent reduction in NOx emissions from mobile sources in 2023, and an 80 percent reduction in 2031 in the South Coast. Current control programs will reduce NOx emissions from today's levels by 209 tons per day by 2031. As part of the proposed State SIP Strategy, CARB will provide an enforceable commitment to achieve in aggregate an additional 107 tons per day of NOx reductions in 2023, and 97 tons per day in 2031. The State SIP Strategy will also provide 48 and 60 tons per day, respectively, of VOC reductions in 2023 and 2031 which provide supplemental benefits in reducing ozone in some portions of the Basin. Any additional commitments to address PM2.5 attainment needs in 2025 will be identified separately, if needed.

The NOx and VOC emission reductions from the proposed new State SIP Strategy measures in 2023 and 2031 are summarized in Table 4-5. CARB's proposed State SIP Strategy for on-road vehicles, locomotives, ocean going vessels, and off-road equipment are briefly summarized in this section and details of these measures are provided in Appendix IV-B.

TABLE 4-5

South Coast Expected Emission Reductions (tpd) from State SIP Strategy Measures

Proposed Measure	2023		2031	
	NOx	VOC	NOx	VOC
On-Road Light-Duty:				
Advanced Clean Cars 2	—	—	0.6	0.4
Lower In-Use Emission Performance Assessment	NYQ	NYQ	NYQ	NYQ
Further Deployment of Cleaner Technologies*	7	16	5	16
Total On-Road Light-Duty Reductions	**7**	**16**	**6**	**16**
On-Road Heavy-Duty:				
Lower In-Use Emission Performance Level	NYQ	<0.1	NYQ	<0.1
Low-NOx Engine Standard – California Action	—	—	5	—
Low-NOx Engine Standard – Federal Action*	—	—	7	—
Medium and Heavy-Duty GHG Phase 2	NYQ	NYQ	NYQ	NYQ
Innovated Clean Transit	<0.1	<0.1	0.1	<0.1
Last Mile Delivery	<0.1	<0.1	0.4	<0.1
Innovative Technology Certification Flexibility	NYQ	NYQ	NYQ	NYQ
Zero-Emission Airport Shuttle Buses	NYQ	NYQ	NYQ	NYQ
Incentive Funding to Achieve Further Emission Reductions from On-Road Heavy-Duty Vehicles	3	0.4	3	0.4
Further Deployment of Cleaner Technologies*	34	4	11	1
Total On-Road Heavy-Duty Reductions	**37**	**4**	**27**	**2**
Off-Road Federal and International Sources*:				
Aircraft				
Further Deployment of Cleaner Technologies*	9	NYQ	13	NYQ
Locomotives				
More Stringent National Locomotive Emission Standards*	<0.1	<0.1	2	<0.1
Further Deployment of Cleaner Technologies*	7	0.3	3	0.3
Ocean-Going Vessels				
Tier 4 Vessel Standards*	—	—	NYQ	NYQ
Incentivize Low Emission Efficient Ship Visits	NYQ	NYQ	NYQ	NYQ
At-Berth Regulation Amendments	0.3	<0.1	1	<0.1
Further Deployment of Cleaner Technologies*	30	NYQ	38	NYQ
Total Off-Road Federal and International Reductions	**46**	**0.3**	**57**	**0.3**

TABLE 4-5 (CONCLUDED)

South Coast Expected Emission Reductions (tpd) from State SIP Measures

Proposed Measure	2023		2031	
	NOx	VOC	NOx	VOC
Off-Road Equipment:				
Zero-Emission Off-Road Forklift Regulation Phase 1	—	—	1	0.1
Zero-Emission Off-Road Emission Reduction Assessment	NYQ	NYQ	NYQ	NYQ
Zero-Emission Off-Road Worksite Emission Reduction Assessment	NYQ	NYQ	NYQ	NYQ
Zero-Emission Airport Ground Support Equipment	<0.1	<0.1	<0.1	<0.1
Small Off-Road Engines	0.7	7	2	16
Transport Refrigeration Units Used for Cold Storage	NYQ	NYQ	NYQ	NYQ
Low-Emission Diesel Requirement	0.3	NYQ	1	NYQ
Further Deployment of Cleaner Technologies*	21	21	18	20
Total Off-Road Equipment Reductions	**22**	**28**	**22**	**36**
Consumer Products:				
Consumer Products Program	—	1–2	—	4–5
Total Consumer Products Reductions	—	**1–2**	—	**4–5**
Aggregate Emission Reductions	**113**	**50–51**	**111**	**59–60**

* Request U.S. EPA approval under the provisions of Section 182(e)(5) of the Clean Air Act
"NYQ" denotes emission reductions are Not Yet Quantified
"—" denotes no anticipated reductions

On-Road Light-Duty Vehicles

ADVANCED CLEAN CARS 2: This proposed measure is designed to ensure that near-zero and zero-emission technology options continue to be commercially available, with electric driving range improvements to address consumer preferences for greater ease of use, and to maximize electric vehicle miles travelled (eVMT). The regulation may include lowering fleet emissions further beyond the super-ultra-low-emission vehicle standard for the entire light-duty fleet through at least the 2030 model year, and look at ways to improve real world emissions through implementation programs. Additionally, new standards would be considered to further increase the sales of zero-emission vehicles (ZEVs) and plug-in hybrid electric vehicles (PHEVs) in 2026 (and later years) beyond the levels required in 2025.

LOWER IN-USE EMISSION PERFORMANCE ASSESSMENT: This proposed measure is designed to ensure that in-use vehicles continue to operate at their cleanest possible level by evaluating California's in-use performance-focused inspection procedures and, if necessary, make improvements to further the program's effectiveness. Results from the assessment could be used to improve inspection test procedures, address program fraud, improve the effectiveness and durability of emission-related repair work, and to improve the regulations governing the design of in-use performance systems on motor vehicles to the extent necessary.

FURTHER DEPLOYMENT OF CLEANER TECHNOLOGY: ON-ROAD LIGHT-DUTY VEHICLES: This proposed measure is designed to achieve further emission reductions for the Basin's attainment needs through a

suite of additional actions, including greater penetration of near-zero and zero-emission technologies through incentive programs, and emission benefits associated with increased transportation efficiencies, as well as the potential for autonomous vehicles and advanced transportation systems. The emission reductions will be achieved through a combination of actions to be undertaken by both CARB and the SCAQMD.

On-Road Heavy-Duty Vehicles

LOWER IN-USE EMISSION PERFORMANCE LEVEL FOR HEAVY-DUTY VEHICLES: This proposed measure is designed to ensure that heavy-duty vehicles continue to operate at the cleanest possible level. CARB would develop new, supplemental actions, in the form of regulatory amendments or new regulations, to address in-use compliance and to decrease engine deterioration. This suite of actions includes: amendments to CARB's existing roadside and fleet inspection programs to revise the current opacity limit and make other program improvements to better reflect the capability of current technology; amendments to the warranty requirements and useful life provisions to better reflect the operation of these vehicles; amendments to the not to exceed (NTE) supplemental test procedures for heavy-duty diesel engines; amendments to the durability demonstration provisions within the certification requirements for heavy-duty engines; and adoption of a comprehensive inspection and maintenance program for heavy-duty trucks to test for excessive emissions of multiple pollutants.

LOW-NOx ENGINE STANDARD: This proposed measure is designed to introduce near-zero emission engine technologies that will substantially lower NOx emissions from on-road heavy-duty vehicles. CARB began development of new heavy-duty low-NOx emission standards in 2016, with CARB Board action expected in 2019. A California-only low-NOx standard would apply to all vehicles with new heavy-duty engines sold in California starting in 2023. In order to ensure that all trucks traveling within California would eventually be equipped with an engine meeting the lower NOx standard, CARB may also petition U.S. EPA to establish a new federal heavy-duty engine emission standard. If U.S. EPA fails to initiate the rule development process for a federal standard by the end of 2017, CARB would continue with its development and implementation efforts to establish a California-only low-NOx standard. If U.S. EPA begins the regulatory development process for new federal heavy-duty emission standards by 2017, CARB will coordinate its regulatory development efforts with the federal regulation as much as possible.

MEDIUM AND HEAVY-DUTY GHG PHASE 2: This proposed measure is designed to advance fuel efficiency improvements and achieve greater GHG emission reductions through the introduction of the next generation of integrated engine, powertrain, vehicle and trailer technologies designed to reduce climate emissions and fuel use. U.S. EPA finalized new federal Phase 2 standards for medium- and heavy-duty vehicles in August 2016. The new standards build upon the Phase 1 standards and will push technology improvements beyond what is currently in widespread commercial use. CARB staff plans to present a California Phase 2 proposal for the Board's consideration in 2017. In addition to harmonizing with the federal Phase 2 standards where applicable, staff's proposal may include some more stringent, California-only provisions that are necessary to meet California's unique air quality challenges.

INNOVATED CLEAN TRANSIT: This measure is designed to continue the transition to a suite of cleaner transit options to support the goal of a modern, multi-modal, clean transit system. Access to public transit is especially important for people in disadvantaged communities who may have limited mobility

choices. The measure will consider a variety of mechanisms to support access to innovative transit and mobility options that together will achieve emission reduction or other benefits in disadvantaged communities, maintain or expand service, while deploying advanced clean technologies. CARB staff will develop and propose a variety of approaches and mechanisms to support the transition to a suite of innovative clean transit options. CARB staff have convened a technical workgroup and a transit agency subcommittee to inform key data collection and analysis, and to help develop and refine potential approaches, which may include: 1) securing binding commitments from the State's transit providers for a long-term vision for transitioning to zero-emission buses and other technologies; 2) continuing to support to the maximum extent possible the near-term deployment of zero-emission buses into service where transit service can be maintained, expanded, or enhanced; and 3) working with zero-emission first and last-mile solutions .

LAST MILE DELIVERY: This measure is designed to increase the penetration of the first wave of zero-emission heavy-duty technology into applications that are well suited to its use. This proposed measure will result in the use of low-NOx engines and the development of increasing numbers of zero-emission trucks where best suited, primarily for class 3-7 last mile delivery trucks in California starting in 2020, with a small-scale deployment initially, and ramping up to a higher percentage of new vehicle sales. The initial ramp-up of zero-emission trucks will consider the ability of the new technology to meet the operational needs of the users. CARB staff is evaluating options for purchase requirements.

INNOVATIVE TECHNOLOGY CERTIFICATION FLEXIBILITY: This proposed measure is designed to encourage early deployment of the next generation of truck and bus technologies through defined, near-term CARB certification and on-board diagnostic (OBD) compliance flexibility for medium- and heavy-duty vehicles. This regulation is intended to balance the need to provide key, promising technologies with a predictable and practical CARB-certification pathway, while preserving CARB's overarching objective of ensuring that the expected emission benefits of advanced truck and bus technologies are achieved in-use. This regulation would provide the greatest flexibility for potentially transformational engine and vehicle technologies, such as robust hybrids and heavy-duty engines meeting the optional low-NOx standard. In October 2016, CARB adopted the Innovative Technology Regulation (ITR).

ZERO-EMISSION AIRPORT SHUTTLE BUSES: This proposed measure is designed to achieve NOx and GHG emission reductions goals through advanced clean technology, and to increase the penetration of the first wave of zero-emission heavy-duty technology into applications that are well suited to its use. Like transit buses, the inclusion of zero-emission airport shuttles would serve as a stepping stone to encourage broader deployment of zero-emission technologies in the on-road sector. CARB staff would also consider the feasibility of including requirements for other heavy-duty airport vehicles, such as fixed route vehicles entering/exiting the airports and vehicles operating almost exclusively at the airport facility, such as airport owned operational and maintenance vehicles. CARB staff would develop and propose a regulation or other measures to deploy zero-emission airport shuttles in order to further support market development of zero-emission technologies in the heavy-duty sector.

INCENTIVE FUNDING TO ACHIEVE FURTHER EMISSION REDUCTIONS FROM ON-ROAD HEAVY-DUTY VEHICLES: This proposed measure would use existing CARB and SCAQMD incentive and other innovative funding programs for on-road, heavy-duty vehicles to increase the penetration of near-zero and zero-

emission vehicles and engines. Funding mechanisms would target technologies that meet CARB's current optional low-NOx standard through 2023, consistent with the current round of Moyer Program funding.

FURTHER DEPLOYMENT OF CLEANER TECHNOLOGY: ON-ROAD HEAVY-DUTY VEHICLES: This proposed measure is designed to achieve further emission reductions for the Basin's attainment needs through a suite of additional actions, including greater penetration of near-zero and zero-emission technologies through incentive programs, emission benefits associated with increased operational efficiency strategies, and the potential for new driver assist and intelligent transportation systems. The emission reductions will be achieved through a combination of actions to be undertaken by both CARB and the SCAQMD.

Off-Road Federal and International Sources

FURTHER DEPLOYMENT OF CLEANER TECHNOLOGIES: OFF-ROAD FEDERAL AND INTERNATIONAL SOURCES: This measure is designed to achieve further emission reductions for the Basin's attainment needs through a suite of additional actions that would be taken at the State and local level to achieve further reductions among the three categories off-road federal and international sources: ocean-going vessels, aircraft, and locomotives. These actions are designed to increase the penetration of cleaner ocean-going vessels, aircraft, and locomotive technologies, and to promote efficiency improvements at the equipment, sector, and systems levels through: expanding and enhancing existing incentive and innovative funding programs to increase the deployment of cleaner technologies; incentivizing cleaner ships and aircraft to come to California; partnering with engine manufacturers to encourage production of cleaner, more efficient engines; continuing to support demonstration projects; and encouraging efficiency improvements. Achieving the magnitude of emission reductions necessary from this category will require strong action at the federal and international level, coupled with State and local advocacy and action to facilitate these efforts.

MORE STRINGENT NATIONAL LOCOMOTIVE EMISSION STANDARDS: This proposed measure is designed to reduce emissions from new and remanufactured locomotives. CARB would petition U.S. EPA for both new Tier 5 national emission standards for newly manufactured locomotives, and more stringent national requirements for remanufactured locomotives. CARB staff estimates that the U.S. EPA could require manufacturers to implement the new locomotive emission regulations as early as 2023 for remanufactured locomotives, and 2025 for newly manufactured locomotives. A new federal standard could also facilitate development and deployment of zero-emission track mile locomotives and zero-emission locomotives by building incentives for those technologies into the regulatory structure.

TIER 4 VESSEL STANDARDS: This measure is designed to reduce emissions from ocean going vessels. CARB would advocate with U.S. EPA, the U.S. Coast Guard, and international partners for the IMO to adopt more stringent emission standards. Specifically, CARB would advocate for new Tier 4 NOx and PM standards, plus efficiency targets for existing vessels, and new vessel categories not covered by IMO efficiency standards.

INCENTIVIZE LOW EMISSION EFFICIENT SHIP VISITS: This measure is designed to achieve early implementation of clean vessel technologies (e.g., liquefied natural gas, Tier 3 standards or better), and to incentivize vessels with those technologies in California service. CARB staff would work with California seaports, ocean carriers, and other stakeholders to develop the criteria and to identify the best

way to incentivize introduction of Low Emission Efficient Ships into the existing fleet of vessels that visit California seaports.

AT-BERTH REGULATION AMENDMENTS: This measure is designed to further reduce emissions from ships that visit California ports. CARB would investigate expanding the current At-Berth Regulation to include smaller fleets, additional vessel types (including roll-on/roll-off vehicle carriers, bulk cargo carriers, and tankers), and additional operations.

Off-Road Equipment

ZERO-EMISSION OFF-ROAD FORKLIFT REGULATION PHASE 1: This measure is designed to increase penetration of ZEVs in off-road applications, advance ZEV commercialization, and to set a market signal to technology manufacturers and investors. CARB staff would develop and propose a regulation with specific focus on forklifts with lift capacities equal to or less than 8,000 pounds, for which zero-emission technologies have already gained appreciable customer acceptance and market penetration.

ZERO-EMISSION OFF-ROAD EMISSION REDUCTION ASSESSMENT: This measure is designed to expand the use of near-zero and zero-emission technology in non-freight, off-road applications. This assessment would be a follow-up to off-road measures implemented in the 2023+ timeframe, and through it CARB would identify opportunities to transfer near-zero and zero-emission technologies to heavier equipment, such as high lift-capacity forklifts or other equipment in the construction, industrial, and mining sectors with the intent of expanding their application as technology matures and infrastructure grows. Through this assessment, CARB would provide the Board with an informational update regarding the status of ZEVs in off-road applications once the Phase 1 forklift regulation is in place in 2025 or later, which would focus primarily on the scalability and transferability of zero-emission technologies to larger, higher power-demand equipment types, and would be used to inform the development of the Phase 2 regulation.

ZERO-EMISSION OFF-ROAD WORKSITE EMISSION REDUCTION ASSESSMENT: This measure is designed to foster the development of a robust worksite efficiency program and to facilitate the deployment of technologies and/or strategies that increase worksite efficiency, such as connected vehicles, automation, and fleet management technologies in off-road sectors. Through this assessment, CARB would identify opportunities to further expand the use of the aforementioned strategies and/or near-zero and zero-emission technologies, and would provide the Board with an informational update regarding the status of the aforementioned technologies and/or strategies, with a focus on business return on investment, scalability and sustainability of the system, and ancillary benefits such as improved safety and work consistency. There would also be potential testing comparing fuel efficiency, work productivity, and emission reductions. CARB would also encourage deployment via incentives or by providing credit in the off-road rule.

ZERO-EMISSION AIRPORT GROUND SUPPORT EQUIPMENT: This measure is designed to increase the penetration of the first wave of zero-emission heavy-duty technology in applications that are well suited to its use, and to facilitate further technology development and infrastructure expansion. CARB would develop and propose a regulation to accelerate the transition of diesel and large spark ignition airport ground support equipment to zero-emission technology.

SMALL OFF-ROAD ENGINES: This measure is designed to reduce emissions from SORE, and to increase the penetration of zero-emission technology. SORE that are subject to CARB regulations are used in residential and commercial lawn and garden equipment, and other utility applications. CARB will promote increased use of zero-emission equipment, develop and propose tighter exhaust and evaporative emission standards, and enhance enforcement of current emission standards for SORE.

TRANSPORT REFRIGERATION UNITS USED FOR COLD STORAGE: This measure is designed to advance near-zero and zero-emission technology commercialization by increasing the early penetration of hybrid electric and electric standby equipped transport refrigeration units used for cold storage, and supporting the needed infrastructure developments. CARB would develop a regulation to phase-in limits to stationary operating times for internal combustion engines at certain California facilities. Facilities may be required to provide the necessary electric infrastructure to support this action. CARB is currently offering funding through the Proposition 1B Goods Movement Emission Reduction Program to support both purchase of TRUs that can plug in and the stationary electric infrastructure.

LOW-EMISSION DIESEL REQUIREMENT: This measure is designed to reduce emissions from the portion of the heavy-duty fleet that will continue to operate on internal combustion engines. The proposed measure would establish performance requirements for Low Emission Diesel, and would require that diesel fuel providers decrease criteria pollutant emissions from their diesel products until 2031. Due to the magnitude of needed NOx reductions in the Basin and the large volumes of Low-Emission Diesel needed for full statewide implementation, the proposed measure could be phased-in with a gradual implementation strategy that starts in the Basin, and subsequently expands Statewide.

FURTHER DEPLOYMENT OF CLEANER TECHNOLOGIES: OFF-ROAD EQUIPMENT: This measure is designed to achieve further emission reductions for the Basin's attainment needs through a suite of additional actions, including greater penetration of near-zero and zero-emission technologies through incentive programs, and emission benefits associated with the potential for worksite integration and efficiency, as well as connected and autonomous vehicle technologies. These emission reductions will be achieved through a combination of actions to be undertaken by both CARB and the SCAQMD.

SCAG's Regional Transportation Plan/Sustainable Communities Strategy and Transportation Control Measures

The Southern California Association of Governments (SCAG), the Metropolitan Planning Organization (MPO) for Southern California, is mandated to comply with federal and State transportation and air quality regulations. Federal transportation law authorizes federal funding for highway, highway safety, transit, and other surface transportation programs. The federal CAA establishes air quality standards and planning requirements for various criteria air pollutants.

Transportation conformity is required under CAA Section 176(c) to ensure that federally supported highway and transit project activities "conform to" the purpose of the SIP. Conformity currently applies to areas that are designated nonattainment, and those re-designated to attainment after 1990

("maintenance areas" with plans developed under CAA Section 175[A]) for the specific transportation-related criteria pollutants. Conformity for the purpose of the SIP means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant NAAQS. The transportation conformity regulation is found in 40 CFR Part 93.

Pursuant to California Health and Safety Code Section 40460, SCAG has the responsibility of preparing and approving the portions of the AQMP relating to regional demographic projections and integrated regional land use, housing, employment, and transportation programs, measures, and strategies. The SCAQMD combines its portion of the Plan with those prepared by SCAG.

The Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and Transportation Control Measures (TCMs), included as Appendix IV-C of the 2016 AQMP/SIP for the Basin, are based on SCAG's Final 2016 RTP/SCS and consist of the following four sections.

Section I. Introduction

As required by federal and state law, SCAG is responsible for ensuring that the regional transportation plan, program, and projects are supportive of the goals and objectives of AQMPs/SIPs. SCAG is also required to develop demographic projections and a regional transportation strategy and control measures for the South Coast AQMP/SIP.

As an MPO, SCAG develops the RTP/SCS every four years. The RTP/SCS is a long-range regional transportation plan that provides for the development and integrated management and operation of transportation systems and facilities that will function as an intermodal transportation network for the SCAG region. The RTP/SCS also outlines certain land use growth strategies that provide for more integrated land use and transportation planning, and maximize transportation investments to achieve regional GHG reduction targets set by CARB pursuant to SB 375.

SCAG also develops the biennial Federal Transportation Improvement Program (FTIP). The FTIP is a multimodal program of capital improvement projects to be implemented over a six year period. The FTIP implements the programs and projects in the RTP/SCS.

Section II. RTP/SCS and TCMs

The SCAG Region faces many critical challenges including demographics, transportation system preservation, transportation funding, goods movement, housing, air quality, climate change, and public health. Under the guidance of the goals and objectives adopted by SCAG's Regional Council, the 2016 RTP/SCS was developed to provide a blueprint to integrate land use and transportation strategies to help achieve a coordinated and balanced regional transportation system. The Final 2016 RTP/SCS represents the culmination of more than three years of work involving dozens of public agencies, 197 local jurisdictions in the SCAG region, hundreds of local, county, regional and state officials, the business community, environmental groups, as well as various nonprofit organizations. The 2016 RTP/SCS was adopted by the SCAG Regional Council on April 7, 2016.

The Final 2016 RTP/SCS makes a concerted effort to integrate the region's transportation network with land uses in order to achieve an even more sustainable region over the coming decades. Accordingly,

the Final 2016 RTP/SCS includes a host of regional strategies for addressing growth, land use and improving the region's transportation system. These are listed below.

Land Use Strategies

- Focus New Growth around Transit/High Quality Transit Areas (HQTAs)
- Plan for Growth around Livable Corridors
- Provide More Options for Short Trips/Neighborhood Mobility Areas
- Support Zero Emission Vehicles & Expand Electric Vehicle Charging Stations
- Support Local Sustainability Planning
- Protect Natural and Farm Lands
- Balance Growth Distribution between 500-Foot Buffer Areas and HQTAs

Transportation Strategies

- Preserve Our Existing System
- Manage Congestion through Transportation Demand Management (TDM) and Transportation System Management (TSM) including advanced ramp metering, and expansion and integration of the traffic signal synchronization network
- Expand Regional Transit System
- Expand Passenger Rail and Maintain High-Speed Rail Commitments
- Promote Active Transportation
- Improve Highway and Arterial Capacity
- Strengthen Regional Transportation Network for Goods Movement
- Improve Airport Ground Access

Included within these transportation system improvements are TCM projects that reduce vehicle use or improve traffic flow or congestion conditions. TCMs include the following three main categories of transportation improvement projects and programs:

- Transit, intermodal transfer, and active transportation measures;
- High occupancy vehicle (HOV) lanes, high occupancy toll (HOT) lanes, and their pricing alternatives; and
- Information-based transportation strategies.

Attachment A of Appendix IV-C is a list of transportation control measure projects that are specifically identified and committed to in the Draft 2016 AQMP. Per the CAA, these committed TCMs are required to receive funding priority and be implemented timely. In the event that a committed TCM cannot be delivered or will be significantly delayed, the TCM must be substituted for. It is important to note that as the SCAG's FTIP is updated every two years, new committed TCMs are added to the applicable SIP from the previous FTIP.

Section III. Reasonably Available Control Measure Analysis

As required by the CAA, a reasonably available control measure (RACM) analysis must be included as part of the overall control strategy in the AQMP to ensure that all potential control measures are evaluated

for implementation and that justification is provided for those measures that are not implemented. Appendix IV-C contains the RACM TCM component for the Basin's ozone and PM2.5 control strategy. In accordance with U.S. EPA procedures, this analysis considers TCMs in the Final 2016 RTP/SCS, measures identified by the CAA, and relevant measures adopted in other ozone and PM2.5 nonattainment areas of the country. Based on this comprehensive review, it is determined that the TCMs being implemented in the Basin are inclusive of all TCM RACM.

Section IV. TCM Best Available Control Measure (BACM) Analysis for 2006 PM2.5 NAAQS

The Basin has been reclassified as a "serious" nonattainment area under the 2006 PM2.5 NAAQS effective February 12, 2016. As a result, the Basin is required to implement BACMs including TCMs for the control of direct PM2.5 and PM2.5 precursors from on-road mobile sources. This section serves as the TCM BACM component for the new South Coast 2006 PM2.5 standard SIP.

Following the applicable EPA guidance, the TCM BACM analysis consists of a review of on-going implementation of TCMs in the Basin, a review of TCM measures implemented in other "moderate" and "serious" PM2.5 nonattainment areas as well as "serious" PM10 nonattainment areas throughout the country, and a review of TCMs not implemented in the SCAG region. The analysis demonstrates that the TCM projects being implemented in the Basin constitute TCM BACM.

The emission benefits associated with the Final 2016 RTP/SCS are reflected in the 2016 AQMP projected baseline emissions. As shown in Tables 1-1 and 1-2 in Appendix IV-C, the amount of emission reductions from the RTP/SCS are significantly impacted by the change in vehicle fleet mix and vehicle emission factors. For example, assuming that the future EMFAC2014 vehicle fleet mix and emission factors remain the same as in 2012 (the 2016 RTP/SCS and 2016 AQMP base year), the 2016 RTP/SCS would yield a NOx emission reduction of 5.4 tons per day in 2021 and 9.8 tons per day in 2031 compared with the 2016 RTP/SCS baseline. However, if the future improvement in the fleet mix and emission factors as reflected in EFMAC2014 are factored in, the estimated NOx emission reduction from the 2016 RTP/SCS would drop to 2.8 tons per day in 2023 and 4.5 tons per day in 2031.

For a detailed discussion of the integrated regional land use and transportation strategies, the estimated emission reduction benefits, as well as the cost-benefit analysis, refer to Appendix IV-C: Regional Transportation Plan/Sustainable Communities Strategy and Transportation Control Measures.

SCAQMD Proposed PM2.5 Strategy

Despite the attainment demonstration in the 2012 AQMP, the Basin did not meet the 24-hour PM2.5 standard by 2015, mainly due to the drought conditions that persisted for the past several years. The preliminary 2015 data showed that the 24-hour PM2.5 design value was greater than the federal standard of 35 $\mu g/m^3$. U.S. EPA re-designated the Basin from a "moderate" nonattainment to a "serious" nonattainment area, effective February 12, 2016, which set 2019 as the new attainment deadline. The 2016 AQMP demonstrates that the 24-hour standard will be met by 2019 with no additional reductions beyond already adopted and implemented measures (See Chapter 5).

For the annual PM2.5 standard (12 µg/m^3), the attainment target year is 2021 for a "moderate" nonattainment area and 2025 for a "serious" nonattainment are. Modeling projections show that the annual standard will not be met by 2021 if emission reductions beyond the already adopted control measures are not introduced. The aggressive NOx and VOC reductions proposed to meet the 1997 8-hour ozone standard also do not ensure attainment of the annual PM2.5 standard by 2021. An analysis of the feasibility of additional measures focused on direct PM2.5 and its other precursors did not identify a practical path towards annual PM2.5 attainment by 2021. Therefore, the SCAQMD is requesting a reclassification of the Basin as a "serious" nonattainment area with a new attainment deadline as "expeditiously as practicable," but no later than 2025. While CAA Section 182(e)(5) measures cannot be relied on to show future attainment of PM standards, the NOx strategy to meet ozone standards will still ensure achieving the annual standard by 2025.

However, to further ensure attainment of the annual PM2.5 standards, a series of control measures specifically addressing PM2.5 are being proposed. The proposed PM2.5 control measures include 10 stationary source control measures including episodic controls and technology assessments. These PM2.5 control measures are proposed as needed to ensure or advance the attainment of federal PM2.5 NAAQS per the federal CAA requirements. Each PM2.5 control measure was evaluated to determine the potential emission reductions that could be achieved. In some cases, only a range of possible emission reductions could be determined, and for others, the magnitude of potential reductions cannot be determined at this time. As assessments and potential rule development progress, and feasible emission reductions are identified and quantified, the measures will be implemented to advance attainment if practicable

Each type of control measure relies on a number of control methods. Table 4-6 provides an example of the type of proposed PM2.5 control measures and typical corresponding control methods.

TABLE 4-6

SCAQMD Proposed PM2.5 Measure Control Methods

Source Category	Control Method
Best Available Control Measures for PM2.5 and Ammonia Sources	• Add-On Controls • Best Management Practices • Best Available Control Technology • Best Available Retrofit Control Technology • Process Improvement • Targeted Controls • Preventative Measures • Seasonal or Episodic Controls • Market Incentives • Mandatory Curtailments

Table 4-7 provides a list of the proposed SCAQMD stationary source PM2.5 control measures along with the anticipated adoption/implementation period, implementing agency, and projected emission reductions. The measures cover a variety of source types for PM sources (BCM).

TABLE 4-7

SCAQMD Proposed Stationary Source PM2.5 Control Measures

Number	Title	Adoption	Implementation Period	Implementing Agency	Emission Reductions (tpd) (2021/2025)
BCM-01[4]	Further Emission Reductions from Commercial Cooking [PM]	2018	2025	SCAQMD	0 / 3.3*
BCM-02	Emission Reductions from Cooling Towers [PM]	TBD	TBD	SCAQMD	TBD [a]
BCM-03	Further Emission Reductions from Paved Road Dust Sources [PM]	TBD	TBD	SCAQMD	TBD [a]
BCM-04[5]	Emission Reductions from Manure Management Strategies [NH3]	2019	2020	SCAQMD	0.26 / 0.2 [NH3]
BCM-05	Ammonia Emission Reductions from NOx Controls [NH3]	TBD	TBD	SCAQMD	TBD [a]
BCM-06	Emission Reductions from Abrasive Blasting Operations [PM]	TBD	TBD	SCAQMD	TBD [a]
BCM-07	Emission Reductions from Stone Grinding, Cutting and Polishing Operations [PM]	TBD	TBD	SCAQMD	TBD [a]
BCM-08	Further Emission Reductions from Agricultural, Prescribed and Training Burning [PM]	TBD	TBD	SCAQMD	TBD [a]
BCM-09	Further Emission Reductions from Wood-Burning Fireplaces and Wood Stoves [PM]	TBD	TBD	SCAQMD	TBD [a]
BCM-10	Emission Reductions from Greenwaste Composting [VOC, NH3]	2019	2020	SCAQMD	0.1 / 0.1 [NH3]

* Contingency measure

[a] TBD are reductions to be determined once the measure is further evaluated, the technical assessment is complete, and inventory and cost-effective control approach are identified, and are not relied upon for attainment demonstration purposes

[4] Formerly BCM-03 in the 2012 AQMP and BCM-05 in the 2007 AQMP.

[5] Formerly BCM-04 in the 2012 AQMP.

The following provides a brief description of the SCAQMD proposed PM2.5 control measures. This category includes 10 control measures, including PM2.5 emission reductions from under-fired charbroilers, cooling towers and fugitive dust sources, abrasive blasting, stone cutting and finishing, agricultural and residential burning, composting, and ammonia emission reductions from livestock waste and NOx control equipment.

PM Measures

BCM-01 – FURTHER EMISSION REDUCTIONS FROM COMMERCIAL COOKING: Commercial cooking activities are the largest source of directly emitted PM2.5 emissions in the Basin, and under-fired charbroilers are responsible for the majority of emissions from this source category. To date, a variety of control device technologies have been tested by CE-CERT at the University of California, Riverside, and SCAQMD staff and the inter-agency working group are reviewing draft test results. This control measure is a contingency control measure which would seek additional emission reductions if the annual average PM2.5 standard is not met by 2025. If necessary, the control program would seek to establish a tiered program targeting higher efficiency controls for under-fired charbroilers at large volume restaurants, with more affordable lower efficiency controls at smaller restaurants. As with existing Rule 1138 requirements, a potential future control program for under-fired charbroilers could establish control device efficiency requirements based on restaurant throughput. Efforts could also be taken to develop a control device registration program as an alternative to the SCAQMD permit process. Small business incentive programs funded by mitigation fees or other sources could also be explored to help offset initial purchase and installation costs for restaurants.

BCM-02 – EMISSION REDUCTIONS FROM COOLING TOWERS: This control measure seeks reductions of PM emissions from industrial cooling towers through the use of the latest drift eliminator technologies. This control measure will seek to phase-in the use of drift eliminators with 0.001 percent drift rate for existing cooling towers. This could be achieved by retrofitting older cooling towers with modification to the cooling fans to accompany the drift eliminators, which will also result in water conservation. Newly constructed cooling towers have demonstrated ultra-low drift rates down to 0.0005 percent. This drift rate has been achieved in practice and could be considered a BACT for new construction.

BCM-03 – FURTHER EMISSION REDUCTIONS FROM PAVED ROAD DUST SOURCES: Although fugitive dust emissions from agriculture and construction are primarily in the coarse size fraction (PM10-2.5), entrained road dust is still one of the major direct PM2.5 sources due to the large number of roadways and high traffic volumes in the region. Existing SCAQMD Rules 1157 and 403 requirements to reduce track out from stationary sources are based on a list of options. Further emission reductions could be achieved by specifying the most effective track out prevention measures, such as use of a wheel washing system, for sites with high vehicular activity exiting the site, or those with repeated track-out violations. Existing SCAQMD Rule 1186 requires that certified equipment be used on public roads currently subject to routine street sweeping but does not specify frequency. Further paved road dust PM2.5 emission reductions could be sought through specifying the frequency of street sweeping. Street sweeping as part of routine roadway and highway maintenance may be included in a state, regional and/or local jurisdiction's National Pollutant Discharge Elimination System (NPDES) permits as part of federal Clean Water Act provisions to reduce debris from entering the storm drain system. NPDES permits are governed by the U.S. EPA and issued and maintained by regional water quality control boards. SCAQMD will coordinate with NPDES

permittees and regional water quality control boards to ensure rules of this Plan or future Plans do not conflict with or otherwise compromise NPDES permit requirements. This review is not intended to be a part of the NPDES permit approval process or a reevaluation of existing NPDES permits, but is intended to determine current street sweeping or highway maintenance requirements and practices to ensure that any SCAQMD rulemaking would not be in conflict with existing NPDES permit requirements. As part of efforts to reduce paved road dust silt loadings and the corresponding PM emissions, an evaluation of existing SCAQMD fugitive dust rules will be conducted to determine if additional PM2.5 emissions can be achieved.

BCM-04 – EMISSION REDUCTIONS FROM MANURE MANAGEMENT STRATEGIES: This control measure seeks to use manure management systems to reduce ammonia, a PM precursor, from fresh manure. Examples include acidifier application, dietary manipulation, feed additives, and other manure control strategies which can be applied on a year-around basis. To minimize costs, some control technologies can be seasonally or episodically applied during times when high ambient PM2.5 levels are of concern. Dietary manipulation such as lowering the protein content and including high-fiber ingredients is an effective method to decrease ammonia emission from monogastric animals' and ruminants' manure. Feed additives can be considered as a seasonal or episodic control strategy when ambient PM2.5 concentrations are highest. New approaches to reduce ammonia emissions from manure can be considered that include manure slurry injection, microbial manure additives, manure belt cleaning in laying hen houses, cage-free egg laying manure removal, and poultry manure thermal gasification. Finally, this control measure will implement all feasible control measures and compliance with federal BACM requirements, including lowering the threshold for Large Confined animal facilities under Rule 223 – Emission Reduction Permits for Large Confined Animal Facilities.

BCM-05 – AMMONIA EMISSION REDUCTIONS FROM NOx CONTROLS: This control measure seeks to reduce ammonia from NOx controls such as Selective Catalytic Reduction (SCR) and Selective Non-Catalytic Reduction (SNCR). These systems are capable of reducing NOx emissions from combustion sources very effectively. However, the use of systems also results in potential emissions of ammonia that "slip" past the control equipment and into the atmosphere. Ammonia is a precursor gas for secondary PM formation. Recent advances in catalyst technology have resulted in the development of ammonia slip catalysts that selectively convert ammonia into nitrogen gas. These catalysts could be installed post-SCR and would result in less ammonia slip.

BCM-06 – EMISSION REDUCTIONS FROM ABRASIVE BLASTING OPERATIONS: Existing SCAQMD Rule 1140 regulates opacity requirements for confined and unconfined abrasive blasting operations using various abrasives. The California Health and Safety Code prohibits local districts from requiring emission and performance standards more or less stringent than the State regulation. Rule 1140 has been developed with the ultimate goal of consistency. Rule 1140 establishes the emission and performance standards, including prohibition against visible emissions from confined or unconfined abrasive blasting operations, which is conforming to the California Code of Regulations Title 17, Subchapter 6 – Abrasive Blasting. Current permit conditions for abrasive blasting require venting to a PM air pollution control (APC) equipment when in full use. Baghouses or dry filters are the most frequently used APC equipment. This control measure proposes voluntary applications of a portable blasting enclosure/booth with a dust collection system by providing incentives, primarily focusing on dry abrasive blasting operations conducted in open areas using portable blasting equipment with or without a written SCAQMD permit.

BCM-07 – EMISSION REDUCTIONS FROM STONE GRINDING, CUTTING AND POLISHING OPERATIONS: Stone fabricating operations, including, but not limited to, grinding, cutting, and polishing generate airborne dust emissions containing PM10, some PM2.5, and silica particles that are known to cause lung diseases. Many of these operations are done at confined or unconfined worksites by construction workers, remodeling contractors and individuals, and may not be sufficiently controlled for dust emissions. This control measure seeks both wet and dry methods of control, local exhaust emissions control, no visible emissions requirements, and financial incentives as a regulatory alternative for exchanging existing wet or dry equipment with new equipment that includes integrated add-on controls.

BCM-08 – FURTHER EMISSION REDUCTIONS FROM AGRICULTURAL, PRESCRIBED AND TRAINING BURNING: This control measure proposes to further reduce PM emissions from open burning sources. Further PM emission reductions could be achieved through use of a fee schedule and/or an incentive program to limit agricultural burning and promote burning alternatives (e.g., chipping/grinding or composting). One approach to reduce emissions could involve establishing an administrative fee as part of the burn permit program based on acreage or amount of material burned for the purposes of processing and enforcing. Fees would not be charged to producers using burning alternatives. Another approach could involve providing incentives to agricultural producers, especially in peak PM2.5 areas, to implement alternatives to burning. A demonstration project could also be established where a SCAQMD contractor could conduct chipping/grinding and removal activities in peak PM2.5 areas at no, or reduced, cost to producers.

BCM-09 – FURTHER EMISSION REDUCTIONS FROM WOOD-BURNING FIREPLACES AND WOOD STOVES: This control measure seeks additional emission reductions from residential wood burning activities. Residential wood burning results in directly emitted PM2.5 and curtailment programs and emission reductions can be very cost-effective relative to other source categories. Based on a review of U.S. EPA guidance documents and other air district wood smoke control programs, the existing SCAQMD curtailment program (Rule 445) threshold could be lowered. A lower curtailment criteria (e.g., 20 or 25 $\mu g/m^3$) could be established, which would increase the number of no burn days but not completely prohibit wood burning during the winter. Based on historical data (2013–2015) for the November through February winter season, it is estimated there would be 11 and 28 additional curtailment days, on average, at the 25 and 20 $\mu g/m^3$ thresholds, respectively, above the estimate of 24 days at the current threshold. The Check Before You Burn program could also be extended to include the months of October and/or March as high PM2.5 levels can occur during these periods. All of these potential control options would increase the number of no burn days which could lower the contribution of wood smoke to ambient PM2.5 levels in the winter months. Although these episodic reductions are designed to address 24-hour PM2.5 concentrations, a consistent reduction in wintertime PM2.5 from reduced wood burning could have an impact on annual average PM2.5 concentrations. Further analysis will be conducted to determine the appropriate approach to achieve the emission reductions necessary to demonstrate attainment of both the 24-hour and annual average federal PM2.5 standards. The current SCAQMD program encourages households within high PM2.5 areas to upgrade wood-burning devices through SCAQMD incentives of up to $1,600 to offset purchase and installation costs. Although this program has been effective, additional reductions may be achieved through the use of higher incentives or expansion of the eligible geographic area. Experience has shown that education and outreach to targeted households is vital to ensure program participation,

and an additional element of this control measure would focus on expanding the awareness of the incentive programs.

BCM-10 – EMISSION REDUCTIONS FROM GREENWASTE COMPOSTING: VOCs and ammonia, which are PM precursor gases, are emitted from composting of organic waste materials including greenwaste and foodwaste and are currently regulated by existing SCAQMD Rule 1133.3. Although Rule 1133.3 covers foodwaste composting, the level of emissions from foodwaste composting has not been fully characterized, mainly due to the lack of related emissions test data. This control measure proposes potential emission minimization through emerging organic waste processing technology and potential emission reductions through restrictions on the direct land application of chipped and ground uncomposted greenwaste and through increased diversion to anaerobic digestion. This proposed control measure could seek a 15-day pathogen reduction process of chipped and ground uncomposted greenwaste with composting BMPs to reduce potential VOC and ammonia emissions from land applied greenwaste.

SCAQMD Proposed Contingency Measures

Pursuant to federal CAA Section 172(c)(9), contingency measures are emission reduction measures that are to be automatically triggered and implemented if an area fails to attain the national ambient air quality standard by the applicable attainment date, or fails to make reasonable further progress (RFP) toward attainment.

> *Such plan shall provide for the implementation of specific measures to be undertaken if the area fails to make reasonable further progress, or to attain the national primary ambient air quality standard by the attainment date applicable under this part. Such measures shall be included in the plan revision as contingency measures to take effect in any such case without further action by the State or the Administrator. (CAA Section 172(c)(9))*

U.S. EPA has issued guidance that the contingency measure requirement could be satisfied with already adopted control measures, provided that the controls are above and beyond what is needed to demonstrate attainment with the NAAQS (76 FR 57891).

> *U.S. EPA guidance provides that contingency measures may be implemented early, i.e., prior to the milestone or attainment date. Consistent with this policy, States are allowed to use excess reductions from already adopted measures to meet the CAA Sections 172(c)(9) and 182(c)(9) contingency measures requirement. This is because the purpose of contingency measures is to provide extra reductions that are not relied on for RFP or attainment, and that will provide a cushion while the plan is being revised to fully address the failure to meet the required milestone. Nothing in the CAA precludes a State from implementing such measures before they are triggered.*

In August 2016, U.S. EPA issued the Final Rule of "*Fine Particle Matter National Ambient Air Quality Standards: State Implementation Plan Requirements*" (81 FR 58010) that provides a planning requirement framework for the 2012 and future PM2.5 NAAQS pursuant to Subpart 4. Reasonable Further Progress (RFP) is tracked with milestones and the new rule requires a SIP submittal in nine months after missing a

milestone to show the next milestone will be met along with contingency measures. The compliance with RFP contingency can be found in Appendix VI-C.

The 2012 base year design value for the 24-hour PM2.5 attainment demonstration is 36.6 µg/m^3 and the 2019 attainment year design value must be less than 35.4 µg/m^3 (see Chapter 5). Linear progress towards attainment over the seven year period yields one year's worth of air quality improvements equal to approximately 0.2 µg/m^3. Thus, the contingency measures should provide for approximately 0.2 µg/m^3 of air quality improvements to be automatically implemented in 2020 if the Basin fails to attain the 24-hour PM2.5 in 2019. Because the baseline concentrations in 2019 are anticipated to be 32.1 µg/m^3, there is linear progress of about 0.6 µg/m^3 per year, with a resulting 3.3 µg/m^3 of air quality improvement beyond what is required for attainment. The improvement is occurring due to adopted measures, such as on-road and off-road mobile source regulation, that are being implemented in the future generating these annual reductions. Therefore, excess emission reductions from already adopted measures lead to much more than one year's worth of air quality improvements, and thus the contingency measure requirement for the 24-hour PM2.5 NAAQS is satisfied. In addition, SCAQMD Rule 445 (Wood Burning Devices) imposes a mandatory burning curtailment for a specific source receptor area whenever a PM2.5 level of greater than 30 µg/m^3 is predicted, or for the entire South Coast Air Basin whenever a PM2.5 level of greater than 30 µg/m^3 is predicted for a source receptor area containing a monitoring station that has recorded a violation of the federal 24-hour PM2.5 NAAQS (35 µg/m^3) for either of the two previous three-year periods. By definition, this adopted rule requirement is a contingency measure that is undertaken if the area fails to attain the 24-hour PM2.5 NAAQS (35 µg/m^3) and the timing to implement is immediate.

Similarly, the annual PM2.5 base year design value for the annual PM2.5 attainment demonstration is 14.9 µg/m^3 and the 2025 attainment year design value must be less than 12 µg/m^3 (see Chapter 5). Linear progress towards attainment over the 13 year period yields one year's worth of air quality improvements equal to approximately 0.2 µg/m^3. The NOx strategy will assist in meeting the annual PM2.5 as "expeditiously as practicable" earlier than the attainment year of 2025. Contingency measure BCM-01 will reduce emissions in excess of the equivalent of the one year's worth of reduction (0.2 µg/m^3) (see Appendix VI).

To the extent the 1997 and 2008 8-hour ozone standards will still rely on CAA Section 182(e)(5) flexibility, contingency measures for ozone are not required until three years before the attainment date. Further detailed descriptions of contingency requirements can be found in Chapter 6 – Other Clean Air Act Requirements. As discussed in Chapter 6 and consistent with U.S. EPA guidance, the SCAQMD is proposing to use excess air quality improvements from existing measures supplemented with measures in the proposed control strategy to satisfy contingency measure requirements.

SIP Emission Reduction Commitment

The SIP emission reduction commitment in the 2016 AQMP from adopted rules and proposed measures are divided into commitments for the PM2.5 and ozone SIPs. Taken together, these reductions are relied upon to demonstrate expeditious progress and attainment of the federal air quality standards. The following sections first describe the methodology for SIP emission reduction calculations and the

creditable SIP reductions, then describe what procedures will be followed to ensure fulfillment of the commitment.

SIP Emission Reduction Tracking

For purposes of tracking progress in emission reductions, the baseline emissions for the year 2019 (24-hour average), 2021/2025 (annual average) and 2023/2031 (summer planning inventory) in the 2016 AQMP will be used, regardless of any subsequent new inventory information that reflects more recent knowledge. This is to ensure that the same "currency" is used in measuring progress as was used in designing the Plan. This will provide a fair and equitable measurement of progress. Therefore, it makes no difference whether progress is measured by emission reductions or remaining emissions for a source category. However, the most recent emission inventory information at the time of rule development will continue to be used for calculating reductions, and assessing cost-effectiveness and socioeconomic impacts of the proposed rule. Therefore, for future rulemaking activity, both the most recent and AQMP inventories will be reported.

Any emission reductions achieved beyond the existing SCAQMD regulations are creditable only if they are also SIP-enforceable. Therefore, in certain instances, the SCAQMD may have to adopt regulations to reflect the existing industry practices in order to claim SIP reduction credit, with the understanding that there may not be additional reductions beyond what has already occurred. Exceptions can be made where reductions are real, quantifiable, surplus to the Final 2016 AQMP baseline inventories, and enforceable through other state and/or federal regulations. Also, any emission inventory revisions, which have gone through a peer review and public review process, can also be SIP creditable.

Reductions from Adopted Rules

A number of control measures contained in the 2012 AQMP have been adopted as rules. These adopted rules and their projected emission reductions become assumptions in developing the AQMP future year inventories. Although they are not part of the control strategy in the 2016 AQMP, continued implementation of those rules is essential in achieving clean air goals and maintaining the attainment demonstration. Table 1-2 of Chapter 1 lists the rules adopted by the SCAQMD since the adoption of the 2012 AQMP and their expected emission reductions.

Reductions from SCAQMD Control Measures

For purposes of implementing an approved SIP, the SCAQMD is committed to adopt and implement control measures that will achieve, in aggregate, emission reductions specified in Tables 4-8 through 4-11 to demonstrate expeditious implementation of measures toward meeting the federal 2012 annual PM2.5, the 1979 1-hour ozone, the 1997 8-hour ozone, and the 2008 8-hour ozone standards, respectively. Emission reductions achieved in excess of the amount committed to in a given year can be applied to the emission reduction commitments of subsequent years. The SCAQMD is committed to adopt the control measures in Tables 4-2, 4-4, and 4-7 unless these measures or a portion thereof are found infeasible and other substitute measures that can achieve equivalent reductions in the same adoption or implementation timeframes are adopted. Findings of infeasibility will be made at a regularly scheduled meeting of the SCAQMD Governing Board with proper public notification. For purposes of the SIP commitment, infeasibility means that the proposed control technology is not reasonably likely to be

available by the implementation date in question, or achievement of the emission reductions by that date is not cost-effective. It should be noted that the reductions in Tables 4-8 through 4-11 are committed only to the extent needed to achieve attainment by attainment deadlines (2025 for the 2012 annual PM2.5; 2023, 2024, and 2032 for the 1979 1-hr, 1997 8-hr, and 2008 8-hr ozone, respectively), and if any substitution is needed, the alternative measures will need to achieve the same emission reductions or air quality benefit. It should be also noted that Tables 4-8 through 4-11 not only include the aggregate emission reduction commitments, but also the anticipated specific control measures to meet that reduction commitment with the understanding that if there is a shortfall in the individual measures for a particular year, substitution to achieve the reduction could be generated from other control measures for the same or previous years. The SCAQMD acknowledges that this commitment is enforceable under Section 304(f) of the federal CAA. U.S. EPA will not credit SIP reductions unless the control measures are adopted and approved into the SIP at the time U.S. EPA takes action on the plan, except that U.S. EPA has in the past allowed about 10 percent of required reductions to be in the form of "enforceable commitments."

Adoption and Implementation

As a partial response to concerns raised by the regulated community that costly controls may be required to meet the SIP obligations, previous AQMPs have established cost-effectiveness thresholds for additional tiered levels of analysis. The 2012 AQMP established $16,500 per ton of VOC and $22,500 per ton of NOx as the thresholds. The legal requirements for emission reductions to reach attainment remain, but the cost of achieving those reductions will increases as the most cost-effective controls have already been implemented. To reflect this reality, as well as inflation adjustments since the current thresholds were established, the 2016 AQMP proposes thresholds of $30,000 per ton of VOC and $50,000 per ton of NOx for tiered levels of analysis. Note, however, with the new focus on incentives and public funding, not all of this cost will necessarily be borne by industry. Specifically, proposed rules with an average cost-effectiveness above these threshold will trigger a more rigorous average cost-effectiveness, incremental cost-effectiveness, and socioeconomic impact analysis. A public review and decision-making process will be instituted to seek lower, more cost-effective alternatives. In addition, the SCAQMD staff, with input from stakeholders, will attempt to develop viable control alternatives within the industry source categories that a rule is intended to regulate. If it is determined that control alternatives within the industry source category are not feasible, staff will perform an evaluation of the control measure as described in the next paragraph. Viable alternatives will be reviewed by the SCAQMD Governing Board at a public meeting no less than 90 days prior to rule adoption and direction can be given to staff for further analysis. During this review process, incremental cost-effectiveness scenarios and methodology will be specified, and industry-specific affordability issues will be identified as well as possible alternative control measures. The SCAQMD Governing Board may adopt the original or an alternative that is consistent with state and federal law. In addition, staff will include in all set hearing items a notification whether the proposed rules exceed the cost thresholds.

Alternative/Substitute Measures

Under the 2016 AQMP, the SCAQMD will be allowed to substitute SCAQMD source measures in Tables 4-2, 4-4 and 4-7 with other measures, provided the overall equivalent emission reductions by the adoption and implementation dates in Tables 4-2, 4-4 and 4-7 are maintained and the applicable measure in Tables

4-2, 4-4 and 4-7 is deemed infeasible. In order to provide meaningful public participation, when new control concepts are introduced for rule development, the SCAQMD is committed to provide advanced public notification beyond its regulatory requirements (i.e., through its Rule Forecast Report). The SCAQMD will also report quantitatively on the AQMP's implementation progress annually at its regularly scheduled Governing Board meetings. Included in the reports will be any control measures being proposed or measures, or portions thereof, that have been found to be infeasible and the basis of such findings. In addition, at the beginning of the year, any significant emission reduction related rules to be considered are listed in the Governing Board's Rule Forecast Report. The annual report would also provide any finding of a new feasible control measure to substitute for a measure that has been deemed infeasible. The existing rule development outreach efforts such as public workshops, stakeholder working group meetings or public consultation meetings will continue to solicit public input. In addition, if additional technical analysis, including source testing, indicates that actual emissions are less than previously estimated, the reductions would then be creditable toward SIP commitments. In order for reductions from improved emission calculation methodologies to be SIP creditable, a public process and the Governing Board adoption hearing will also be instituted to solicit comments and make appropriate revisions, if necessary.

Reductions from CARB Control Measures

CARB's overall commitment is to achieve the total emission reductions necessary to attain the federal air quality standards, reflecting the combined reductions from the existing control strategy and new measures. Therefore, if a particular measure does not get its expected emission reductions, the State is still committed to achieving the total aggregate emission reductions. If actual emission decreases occur that exceed the projections reflected in the current emission inventory and the State SIP Strategy, CARB will submit an updated emissions inventory to U.S. EPA as part of a SIP revision. The SIP revision would outline the changes that have occurred and provide appropriate tracking to demonstrate that aggregate emission reductions sufficient for attainment are being achieved through enforceable emission reduction measures.

The CARB proposed control measures presented in Table 4-5, combined with ongoing implementation of the current control program, will reduce mobile source NOx emissions 80 percent from the current levels in the Basin by 2031, as well as reduce VOC emissions by 55 percent. The remaining 20 percent will come from additional efforts to enhance the deployment of these cleaner technologies through new incentive funding, efficiency improvements in transportation and freight, and support for the use of advanced transportation technologies, such as intelligent transportation systems and autonomous vehicles. These actions will be implemented through proposed measures for each sector that are designed to provide further emission reductions from the deployment of cleaner technologies necessary to meet the Basin's "extreme" ozone nonattainment area needs. Table 4-12 specifies emission reductions in NOx and VOC emissions committed to be achieved through the CARB regulatory and incentive programs.

TABLE 4-8

Annual PM2.5 (12 µg/m^3) SIP Basin-wide Emission Reduction Commitment
to be Achieved by 2025 through SCAQMD Regulatory Programs
(Annual Average Inventory, tons per day)

YEAR	PM2.5		NOx**	
	Based on Adoption Date	Based on Implementation Date[a]	Based on Adoption Date	Based on Implementation Date[a]
2016				
2017			MOB-10 (1.9) MOB-11 (2.9) MOB-14 (11) **15.8**	
2018	BCM-01 (3.3)		CMB-01 (2.5) CMB-02 (1.1) CMB-03 (1.4) CMB-04 (0.8) ECC-02 (0.3) ECC-03 (1.2) **7.3**	
2019	BCM-04 (0.2)$^{\Delta}$ BCM-10 (0.1)$^{\Delta}$			
2020		BCM-04 (0.2)$^{\Delta}$ BCM-10 (0.1)$^{\Delta}$		CMB-03 (1.4) CMB-02 (1.1) **2.5**
2021				
2022			CMB-05 (5)	CMB-04 (0.8)
2023				ECC-02 (0.3) ECC-03 (1.2) CMB-01 (2.5) MOB-10 (1.9) MOB-11 (2.9) MOB-14 (11) **19.8**
2024				
2025		BCM-01 (3.3)		CMB-05 (5)
TOTAL	**3.3***	**3.3***	**28**	**28**

[a] Represents the final, full implementation date; typically a rule contains multiple implementation dates

$^{\Delta}$ NH3 measure as PM2.5 precursor

* For contingency measure purposes only

** Summer planning inventory

TABLE 4-9

1979 1-hour Ozone (120 ppb) SIP Emission Reduction Commitment to be Achieved by 2022 through SCAQMD Stationary and Mobile Source Regulatory Programs
(Summer Planning Inventory, tons per day)

YEAR	VOC		NOx	
	Based on Adoption Date	Based on Implementation Date[a]	Based on Adoption Date	Based on Implementation Date[a]
2016				
2017	CTS-01 (1) 		MOB-10 (1.9) MOB-11 (2.9) MOB-14 (11) **15.8**	
2018	CMB-01 (1.2) CMB-03 (0.4) ECC-02 (0.07) ECC-03 (0.2) **1.9**		CMB-01 (2.5) CMB-02 (1.1) CMB-03 (1.4) CMB-04 (0.8) ECC-02 (0.3) ECC-03 (1.2) **7.3**	
2019	FUG-01(2) BCM-10 (1.5) **3.5**			
2020		BCM-10 (1.5) CMB-03 (0.4) CTS-01 (1) **2.9**		CMB-02 (1.1) CMB-03 (1.4) **2.5**
2021				
2022		FUG-01 (2) ECC-02 (0.06)^ ECC-03 (0.17)^ CMB-01 (1.0)^ **3.2**		CMB-04 (0.8) MOB-10 (1.9) MOB-11 (2.5) ^ MOB-14 (9.5) ^ ECC-02 (0.26)^ ECC-03 (1.03)^ CMB-01 (2.15)^ **18.1**
TOTAL*	**6.4**	**6.1**	**23**	**21**

[a] Represents the final, full implementation date; typically a rule contains multiple implementation dates

* All ozone strategy reductions are adopted by 2022. However, not all adoptions are implemented by 2022. Therefore, totals are not equal

^ 86 percent of control measures' 2023 reductions

TABLE 4-10

1997 8-hour Ozone (80 ppb) SIP Emission Reduction Commitment to be Achieved by 2023 through SCAQMD Stationary and Mobile Source Regulatory Programs
(Summer Planning Inventory, tons per day)

YEAR	VOC		NOx	
	Based on Adoption Date	Based on Implementation Date[a]	Based on Adoption Date	Based on Implementation Date[a]
2016				
2017	CTS-01 (1) **1.0**		MOB-10 (1.9) MOB-11 (2.9) MOB-14(11) **15.8**	
2018	CMB-01 (1.2) CMB-03 (0.4) ECC-02 (0.07) ECC-03 (0.2) **1.9**		CMB-01 (2.5) CMB-02 (1.1) CMB-03 (1.4) CMB-04 (0.8) ECC-02 (0.3) ECC-03 (1.2) **7.3**	
2019	FUG-01 (2) BCM-10 (1.5) **3.5**			
2020		BCM-10 (1.5) CMB-03 (0.4) CTS-01 (1) **2.9**		CMB-02 (1.1) CBM-03 (1.4) **2.5**
2021				
2022		FUG-01 (2)		CMB-04 (0.8)
2023		ECC-02 (0.07) ECC-03 (0.2) CMB-01 (1.2) **1.5**		ECC-02 (0.3) ECC-03 (1.2) CMB-01 (2.5) MOB-10 (1.9) MOB-11 (2.9) MOB-14 (11) **19.8**
TOTAL	**6.4**	**6.4**	**23**	**23**

[a] Represents the final, full implementation date; typically a rule contains multiple implementation dates

TABLE 4-11

2008 8-hour Ozone (75 ppb) SIP Emission Reduction Commitment to be Achieved by 2031 through SCAQMD Stationary and Mobile Source Regulatory Programs
(Summer Planning Inventory, tons per day)

YEAR	VOC		NOx	
	Based on Adoption Date	Based on Implementation Date[a]	Based on Adoption Date	Based on Implementation Date[a]
2016				
2017			MOB-10 (1.9) MOB-11 (1.0) MOB-14 (7.8) **10.7**	
2018	ECC-02 (0.3) ECC-03 (0.3) CMB-01 (2.8) CMB-03 (0.4) **3.8**		CMB-04 (1.6) ECC-02 (1.1) ECC-03 (2.1) CMB-01 (6.0) CMB-02 (2.8) CMB-03 (1.5) **15.1**	
2019	FUG-01 (2) BCM-10 (1.8) **3.8**			
2020		CMB-03 (0.4)		CMB-03 (1.5)
2021	CTS-01 (2)			
2022		FUG-01 (2)	CMB-05 (5)	CMB-04 (1.6)
2023		ECC-02 (0.3)		ECC-02 (1.1)
2024				
2025				CMB-05 (5)
2026–2030				
2031		ECC-03 (0.3) CMB-01 (2.8) BCM-10 (1.8) CTS-01 (2) **6.9**		ECC-03 (2.1) CMB-01 (6.0) CMB-02 (2.8) MOB-10 (1.9) MOB-11 (1.0) MOB-14 (7.8) **21.6**
TOTAL	**9.6**	**9.6**	**31.0**	**31.0**

[a] Represents the final, full implementation date; typically a rule contains multiple implementation dates

TABLE 4-12

Emission Reduction Commitment to be Achieved by 2031 through CARB Regulatory and Incentive Programs
(Summer Planning Inventory, tons per day)

YEAR	NOx		VOC	
	Based on Adoption Date	Based on Implementation Date[a]	Based on Adoption Date	Based on Implementation Date[a]
2016	5	3	0.5	0.4
2017	0.1		<0.2	
2018	3.4	0.1	16	<0.2
2019	12			
2020	2.6	0.4	0.5	<0.1
2021			4–5	4–5
2022		2		16
2023	88	10	37.3	0.4
2024		7		
2025				
2026		0.6		0.4
2027				
2028				
2029				
2030				
2031		88		37.3
TOTAL	**111**	**111**	**59–60**	**59–60**

[a] Represents the final, full implementation date; typically a rule contains multiple implementation dates

Overall Emission Reductions

A summary of annual average emission inventory and reductions for the proposed control measures for the year 2023 and 2025 is provided in Table 4-13 and Table 4-14, respectively. A summary of summer planning emission inventory and reductions for the years 2023 and 2031 is also provided in Tables 4-15 and 4-16. These reductions reflect the emission reductions associated with implementation of control measures under local, state, and federal jurisdiction. Emission reductions represent the difference

between the projected baseline and the remaining emissions. The federal 2006 24-hr PM2.5 standard will be achieved with baseline emissions by 2019 (see Chapter 5).

Table 4-13 identifies projected reductions based on the annual average inventory for PM2.5 and its precursor gas (NOx) for basin-wide stationary and local mobile control measures to achieve the annual PM2.5 standard as "expeditiously as practicable." These reductions lead to attainment of the federal 2012 annual PM2.5 standard if all reductions from the ozone strategy are creditable towards PM2.5 attainment. However, some measures may only be approvable under CAA Section 182(e)(5), and thus not applicable to PM2.5 attainment demonstrations. SCAQMD will continue to work with U.S. EPA on approvability of measures and reducing reliance on 182(e)(5) measures. Since the creditability of emission reductions and the feasibility of other PM2.5 measures is sufficiently uncertain to advance attainment to 2023, a 2025 attainment date is proposed. Table 4-14 identifies projected reductions based on the annual average inventory for PM2.5 and NOx to achieve the federal 2012 annual PM2.5 standard by 2025 as a "serious" nonattainment area.

Tables 4-15 and 4-16 identify projected reductions based on the summer planning inventory for NOx and VOC emissions to achieve the 1997 8-hour ozone standard by 2023 and 2008 8-hour ozone standard by 2031.

TABLE 4-13

Emission Reductions for 2023 Based on Annual Average Emissions Inventory
(Tons per day)

SOURCES	NOx	PM2.5
Year 2023 Baseline[1]	257	64
Emission Reductions:		
SCAQMD Stationary Sources	7	3 [Δ]
SCAQMD Mobile Sources	16	0
CARB Mobile Sources	113	0
TOTAL Reductions (all measures)	136	3 [Δ]
2023 Remaining Emissions*	**121**	**61**

[1] Emission assumptions from SCAG's 2016 RTP/SCS are already reflected in the AQMP baseline, including TCMs

[Δ] For contingency measure purposes only

* Numbers may not sum due to rounding

TABLE 4-14

Emission Reductions for 2025 Based on Annual Average Emissions Inventory
(Tons per day)

SOURCES	NOx	PM2.5	VOC
Year 2025 Baseline[1]	241	64	353
Emission Reductions:			
SCAQMD Stationary Sources	12	3 Δ	6.4
SCAQMD Mobile Sources	16	0	0
CARB Mobile Sources	67	0	50–51*
Federal Measures	46	0	0.3
TOTAL Reductions (all measures)	141	3 Δ	57–58
2025 Remaining Emissions	**100**	**61**	**295–296**

[1] Emission assumptions from SCAG's 2016 RTP/SCS are already reflected in the AQMP baseline, including TCMs

* Includes Consumer Products

Δ For contingency measure purposes only

TABLE 4-15

Emission Reductions for 2023 Based on Summer Planning Inventory
(Tons per day)

SOURCES	VOC	NOx
Year 2023 Baseline[1]	379	255
Emission Reductions:		
SCAQMD Stationary Sources	6.4	7.3
SCAQMD Mobile Sources	0	15.8
CARB Mobile Sources	50–51*	67
Federal Measures	0.3	46
TOTAL Reductions (all measures)	57–58	136
2023 Remaining Emissions	**321–322**	**119**

[1] Emission assumptions from SCAG's 2016 RTP/SCS are already reflected in the AQMP baseline, including TCMs

* Includes Consumer Products

TABLE 4-16

Emission Reductions for 2031 Based on Summer Planning Inventory
(Tons per day)

SOURCES	VOC	NOx
Year 2031 Baseline[1]	362	214
Emission Reductions:		
SCAQMD Stationary Sources	9.6	20
SCAQMD Mobile Sources	0	10.7
CARB Mobile Sources	59–60*	54
Federal Measures	0.3	57
TOTAL Reductions (all measures)	69–70	142
2031 Remaining Emissions	**292–293**	**72**

[1] Emission assumptions from SCAG's 2016 RTP/SCS are already reflected in the AQMP baseline, including TCMs

* Includes Consumer Products

Implementation

Achieving clean air objectives requires the effective and timely implementation of the control measures. Similar to approaches taken by previous AQMPs, the SIP commitment is to bring each control measure for regulatory consideration or program implementation in a specified time frame. The time frame is based on the ability to implement certain control strategies that will result in the reductions necessary to demonstrate attainment by the required attainment date. There is a commitment to achieve a total emission reduction target, with the ability to substitute for control measures deemed technologically, legally, economically, and/or environmentally not feasible, so long as equivalent reductions are met by other means. These measures are also designed to satisfy the federal CAA requirement of RACT [Section 172(c)], BACM, and the California CAA (CCAA) requirement of BARCT [California Health and Safety Code Section 40440(b)(1)].

The adoption and implementation schedule of the control measures proposed in the 2016 AQMP can be found in Tables 4-2, 4-4, and 4-7. Implementation of the mobile source measures in Table 4-4 rely on actions from many agencies. This section describes each agency's area of responsibility.

Incentive Funding

Funding Needs for Mobile Source Emission Reductions

Given the significant NOx emission reductions needed to attain the federal ozone air quality standards by 2023 and 2031, a combination of public funding incentives along with regulatory actions are needed. In the near-term, there is a need to commercialize zero and near-zero on-road trucks and off-road equipment as early as possible. For national and international transportation sources, there is a need to accelerate deployment of the cleanest locomotives, ocean-going vessels, and aircraft as early as possible in the near-term and promulgation of cleaner exhaust emissions standard in the longer term.

The approach that the SCAQMD and CARB are proposing to achieve the emission reductions identified in the State SIP Strategy (Appendix IV-B) "Further Deployment of Cleaner Technologies" measures and the SCAQMD's mobile source measures (Appendix IV-A) is predicated on securing the amount of funding needed to achieve a significant portion of the NOx emission reductions by 2023, followed with regulatory actions that will be implemented in the mid-2020s. A lower level of funding will be needed if significant NOx emission reductions occur by other measures prior to 2023.

To illustrate this approach, an analysis has been conducted to estimate the funding needed to achieve the emission reductions identified in the "Further Deployment of Clean Technologies" measures proposed in the State SIP Strategy (Appendix IV-B, 2016 AQMP). The analysis is not meant to be the only implementation approach to achieve the emission reductions associated with the "Further Deployment" measures, but meant to illustrate an upper limit of the most likely funding necessary if no other actions are taken to achieve the associated emission reductions. As discussed above, CARB described four implementation approaches for the "Further Deployment" measures, which includes incentives programs, regulations to be developed as zero and near-zero emission vehicles and equipment are commercialized, and the quantification of the emission reduction benefits from operational efficiency improvements and deployment of connected vehicles, autonomous vehicles, and intelligent transportation systems.

Five funding scenarios were analyzed to examine the range of funding needed. The five funding scenarios are summarized below.

Funding Scenario Based on Traditional Carl Moyer Cost-Effectiveness Criteria

This scenario assumes that funding on a per vehicle/equipment basis is based on the anticipated future Carl Moyer Memorial Air Quality Standards Attainment (Moyer) Program cost-effectiveness criteria of $30,000/ton and $50,000/ton to account for near-zero and zero emission technologies. The amount of funding is calculated using the formula from the Moyer Guidelines (Moyer Guidelines, Appendix C). The following assumptions were made:

- Capital Recovery Factor: Seven years until 2020 and then three years until 2024. Three years surplus is the Moyer program minimum lead time.

- For 2031, a 10 year project life is assumed for the early years, dropping to seven years in the later years.

- Cost-effectiveness assumption: At the current $18,262/ton cost effectiveness rate the grant amount may not be sufficient to incentivize turnover. CARB is considering increasing the cost-effectiveness criteria as part of the next update of the Guidelines. For the purposes of this analysis a $30,000/ton cost-effectiveness criteria is assumed to estimate funding needs by 2023 and a $50,000/ton criteria is assumed after 2025 to 2031. If a federal ultra-low NOx exhaust emissions standard is established, the funding would be primarily for zero-emission technologies, which may have cost-effectiveness on the order of $50,000/ton or higher.

Based on the above assumptions, two scenarios are developed. The first scenario assumes that funding would be available to attain the 80 ppb federal ozone air quality standard in 2023. Funding at a lower level would continue at the level needed to meet the 75 ppb standard in 2031. Table 4-17 shows the results of this scenario.

TABLE 4-17

Funding Needed for Mobile Source Sector to Attain Ozone NAAQS
(Based on Moyer Cost-Effectiveness and Assuming Funding Needed to Achieve 2023 Attainment, and Continuing to 2031)

Year	Funding/Yr	C-E = $30,000/ton 2023 t/d NOx	C-E = $30,000/ton 2031 t/d NOx	C-E = $50,000/ton 2031 t/d NOx
2017	$100,000,000	1.4		
2018	$150,000,000	2.0		
2019	$500,000,000	6.8		
2020	$800,000,000	10.9		
2021	$900,000,000	27.9		
2022	$900,000,000	27.9		
2023	$900,000,000	27.9		
2024	$250,000,000		2.4	
2025	$250,000,000		2.4	
2026	$250,000,000		2.4	
2027	$250,000,000			2.0
2028	$250,000,000			2.0
2029	$250,000,000			2.0
2030	$250,000,000			2.0
2031	$250,000,000			2.0
Total NOx Reductions (t/d)		**104.8**	**7.2**	**10.0**
Total Funding (by C-E)		**$4,250,000,000**	**$750,000,000**	**$1,250,000,000**
Total Funding		**$4,250,000,000**		**$6,250,000,000**

Under this scenario, funding of up to $4.25 billion will be needed to achieve around 105 tons/day of NOx emission reductions identified in the State Mobile Source Strategy (Appendix IV-B) by 2023. An additional $2 billion will be needed to attain the federal 8-hour ozone air quality standard by 2031.

The second scenario assumes funding is available to attain the 75 ppb ozone air quality standard in 2031, independent of attainment of the ozone air quality standard by 2023. Table 4-18 shows the results of this analysis.

TABLE 4-18

Funding Needed for Mobile Source Sector to Attain Ozone NAAQS
(Based on Moyer Cost-Effectiveness and Assuming 2023 and 2031 Attainment Funding are Independent)

Year	Funding/Yr	(A) C-E = $30,000/ton 2031 t/d NOx	(B) C-E = $50,000/ton 2031 t/d NOx
2017			
2018			
2019			
2020			
2021	$900,000,000	8.7	
2022	$900,000,000	8.7	
2023	$900,000,000	8.7	
2024	$1,000,000,000		8.2
2025	$1,000,000,000		8.2
2026	$1,000,000,000		8.2
2027	$1,000,000,000		8.2
2028	$1,000,000,000		8.2
2029	$1,000,000,000		8.2
2030	$1,000,000,000		8.2
2031	$1,000,000,000		8.2
Total NOx Reductions (t/d)		**26.1**	**65.6**
Total Funding (by C-E)		**$2,700,000,000**	**$8,000,000,000**
Total Funding			**$10,700,000,000**

If funding is secured to achieve solely the federal ozone air quality standard by 2031, the total funding needed is $10.7 billion (Table 4-17, sum of Columns A and B). Based on these analyses, it is less costly to achieve the 80 ppb ozone air quality standard earlier (in 2023) and utilize subsequent funding to achieve the 75 ppb federal ozone air quality standard by 2031.

The two scenarios analyzed in Tables 4-17 and 4-18 provide an approximate range of $4 to $11 billion in funding over a 7 to 15 year period to achieve the projected NOx emissions reductions.

Funding Scenario Based on Per Vehicle Funding Incentive

Historically, funding for clean air projects are based either on a cost-effectiveness criteria or on a per vehicle incentive basis. Funding under the Carl Moyer Memorial Air Quality Standards Attainment Program is based on cost-effectiveness. However, funding under the Proposition 1B Goods Movement Emission Reduction Program is based on per vehicle incentive funding. For example, a typical goods movement heavy-duty truck replacement provides for up to $50,000 per truck for a new or newer replacement truck. At times, the SCAQMD has augmented the Proposition 1B funding with other funding such as the U.S. EPA Diesel Emission Reduction Act (DERA) funding to provide additional financial incentives to purchase alternative fuel trucks.

Two scenarios were analyzed based on "per vehicle" funding incentives. The assumptions for the two scenarios include:

- Funding needed is based on achieving a significant portion of the NOx emissions reduction needed in 2023 (~105 tons/day) and independently in 2031 (~66 tons/day) as provided in the State Mobile Source Strategy.

- Funding needed for NOx emissions reduction from national and international sources is based on Carl Moyer Program cost-effectiveness criteria.

- Funding needed to implement Control Measure MOB-11 – Extended Exchange Program for larger horsepower lawn and garden equipment such as riding lawnmowers.

- Current and projected NOx emissions reduction from existing projects and future anticipated projects as provided in Control Measure MOB-14 (Appendix IV-A) account for the total NOx emissions reduction in 2023 and 2031.

Table 4-19 shows the analysis of the funding needed to achieve the projected NOx emissions reductions identified in the State Mobile Source Strategy (Appendix IV-B), using per vehicle/equipment incentive amounts and populations.

TABLE 4-19

Funding Needed for Mobile Source Sector to Attain Ozone NAAQS
(Based on per vehicle funding)

(a) Funding Needed to Attain in 2023

Vehicle/Equipment Type/Sector	NOx Emission Reduction (tons/day)	Affected Population	Funding per Vehicle/ Equipment	Total Funding
LDV, LDT-1, LDT-2 (pre-1999)	7	356,825	$9,500	$3,389,837,500
Light and Medium Heavy-Duty Trucks (pre-2014)	11.8	118,590	$25,000	$2,964,750,000
Heavy Heavy-Duty Trucks (pre-2014)	14	31,200	$50,000	$1,560,000,000
TRUs, Forklifts, GSE …	8	61,000	$25,000	$1,525,000,000
Construction & Industrial Equipment	7	6,200	$150,000	$930,000,000
Lawn & Garden	2	2,000,000	$200	$400,000,000
Lawn & Garden - Larger Diesel/Gasoline Equipment	2.9	30,000	$2,000	$60,000,000
Passenger Locomotives	2	12	$2,000,000	$24,000,000
Aircraft, OGV, Freight Locos (assumes federal action)*	40	--	--	$2,940,000,000
Moyer, Prop 1B	9.5	--	--	
Total	**104.2**			**$13,793,587,500**

* Assumes Moyer cost/ton at $30,000/ton + 7 year life. Total funding rounded for discussion purposes

TABLE 4-19 (CONCLUDED)

Funding Needed for Mobile Source Sector to Attain Ozone NAAQS
(Based on per vehicle funding)

(b) Funding Needed to Attain in 2031

Vehicle/Equipment Type/Sector	NOx Emission Reduction (tons/day)	Affected Population	Funding per Vehicle/ Equipment	Total Funding
LDV, LDT-1, LDT-2 (pre-1999)	5	356,825	$9,500	$3,389,837,500
Light and Medium Heavy-Duty Trucks (pre-2013)	5	82,000	$35,000	$2,870,000,000
Heavy Heavy-Duty Trucks (pre-2013)	15	47,700	$50,000	$2,385,000,000
TRUs, Forklifts, GSE…	8	50,000	$25,000	$1,250,000,000
Construction & Industrial Equipment	7	20,000	$100,000	$2,000,000,000
Lawn & Garden	--	--	--	--
Lawn & Garden - Larger Diesel/Gasoline Equipment	1	30,000	$2,000	$60,000,000
Passenger Locomotives	--	--	--	--
Aircraft, OGV, Freight Locos (assumes federal action)*	20	--	--	$1,470,000,000
Moyer, Prop 1B	5.6	--	--	
Total	**66.6**			**$13,424,837,500**

* Assumes Moyer cost/ton at $30,000/ton + 7 year life. Total funding rounded for discussion purposes

Table 4-19 shows the funding needed assuming each mobile source sector achieves the NOx emissions reduction provided in the State Mobile Source Strategy. The total funding needed ranges from $13 to $14 billion to achieve the NOx emission reductions associated with the State Mobile Source Strategy. The analysis assumes every sector reduces its share of the NOx emissions needed for attainment, regardless of cost-effectiveness, and thus includes funding for a larger population of vehicles that individually have smaller emissions.

A more realistic second analysis was conducted with a focus on achieving more emission reductions from heavy-duty vehicles and off-road equipment that would provide a greater cost-effective use of funding. Under this scenario, no significant additional funding is assumed (beyond existing funding) for light-duty vehicles and light-duty trucks. Greater NOx emission reductions would occur from the on-road heavy-duty truck sector. The results of this analysis are shown in Table 4-20. Under this analysis the total funding needed ranges from $9 to $11 billion.

TABLE 4-20

Funding Needed for Mobile Source Sector to Attain Ozone NAAQS
(Based on per vehicle funding and focused on larger vehicles and equipment)

(a) Funding Needed to Attain in 2023

Vehicle/Equipment Type/Sector	NOx Emission Reduction (tons/day)	Affected Population	Funding per Vehicle/ Equipment	Total Funding
Light and Medium Heavy-Duty Trucks (pre-2016)	5.9	68,860	$15,000	$1,032,900,000
Heavy Heavy-Duty Trucks (post-2011 @ near-zero)	25	78,000	$25,000	$1,950,000,000
TRUs, Forklifts, GSE …	8	61,000	$25,000	$1,525,000,000
Construction & Industrial Equipment	7	6,200	$150,000	$930,000,000
Lawn & Garden	2	2,000,000	$200	$400,000,000
Lawn & Garden - Larger Diesel/Gasoline Equipment	2.9	30,000	$2,000	$60,000,000
Passenger Locomotives	2	12	$2,000,000	$24,000,000
Aircraft, OGV, Freight Locomotives (assumes federal action)*	40	--	--	$2,940,000,000
Moyer, Prop 1B	9.5	--	--	
Total	**102.3**			**$8,861,900,000**

* Assumes Moyer cost/ton @$30,000/ton + 7 year life. Total funding rounded for discussion purposes

TABLE 4-20 (CONCLUDED)

Funding Needed for Mobile Source Sector to Attain Ozone NAAQS
(Based on per vehicle funding and focused on larger vehicles and equipment)

(b) Funding Needed to Attain in 2031

Vehicle/Equipment Type/Sector	NOx Emission Reduction (tons/day)	Affected Population	Funding per Vehicle/ Equipment	Total Funding
Light and Medium Heavy-Duty Trucks (pre-2014)	5	82,000	$35,000	$2,870,000,000
Heavy Heavy-Duty Trucks (post-2021)	15	47,700	$50,000	$2,385,000,000
TRUs, Forklifts, GSE …	8	50,000	$25,000	$1,250,000,000
Construction & Industrial Equipment	7	20,000	$100,000	$2,000,000,000
Lawn & Garden	--	--	--	--
Lawn & Garden - Larger Diesel/Gasoline Equipment	1	30,000	$2,000	$60,000,000
Passenger Locomotives	--	--	--	--
Aircraft, OGV, Freight Locomotives (assumes federal action)*	25	--	--	$1,840,000,000
Moyer, Prop 1B	5.6			
Total	**66.6**			**$10,405,000,000**

* Assumes Moyer cost/ton @$30,000/ton + 7 year life. Total funding rounded for discussion purposes

For the socioeconomic impact analysis, an additional scenario was developed assuming that funding would be available to achieve a significant amount, but not all of the NOx emission reductions associated with the State SIP Strategy "Further Deployment" measures in 2023 and assuming that the remaining emissions after 2023 will need to be reduced further to achieve the overall 55 percent NOx emission reductions needed for attainment in 2031. The NOx emission reductions would be around 98 tons/day by 2023 and an additional 20.8 tons/day by 2031. The funding needed by emissions source category is provided in Tables 4-21(a) and 4-21(b). The funding needed for this scenario is around $12.7 billion over the period from 2017 to 2031.

TABLE 4-21

Funding Needed for Mobile Source Sector to Attain Ozone NAAQS
(Based on per vehicle funding)

(a) Funding Needed to Attain in 2023

Vehicle/Equipment Type/Sector	NOx Emission Reduction (tons/day)	Affected Population	Funding per Vehicle/ Equipment	Total Funding
Medium Heavy-Duty Trucks (pre-2017)	5.9	68,860	$15,000	$1,032,900,000
Heavy Heavy-Duty Trucks (post-2011 @ near-zero)	27.4	82,300	$25,000	$2,057,500,000
TRUs, Forklifts, GSE …	9.7	90,000	$25,000	$2,250,000,000
Construction & Industrial Equipment	9.6	10,100	$150,000	$1,515,000,000
Small Off-Road Engines	3.1	270,000	$500	$135,000,000
Passenger Locomotives	2.0	12	$2,000,000	$24,000,000
Aircraft, OGV, Freight Locomotives (assumes federal action)**	40.3	--	--	$2,745,000,000
Total	**98.0**			**$9,759,400,000**

* Note that the total emission reductions under this scenario are not intended to achieve the full emission reductions provided in the State SIP Strategy "Further Deployment of Cleaner Technologies" measures

** Assumes Moyer cost/ton at $30,000/ton + 7 year life. Total funding rounded for discussion purposes

TABLE 4-21 (CONCLUDED)

Funding Needed for Mobile Source Sector to Attain Ozone NAAQS
(Based on per vehicle funding)

(b) Funding Needed to Attain in 2031

Vehicle/Equipment Type/Sector	NOx Emission Reduction (tons/day)	Affected Population	Funding per Vehicle/ Equipment	Total Funding
Medium Heavy-Duty Trucks (pre-2020)	1.7	35,100	$35,000	$1,228,500,000
Heavy Heavy-Duty Trucks (pre-2028)	5.4	18,600	$50,000	$930,000,000
TRUs, Forklifts, GSE…	2.7	42,000	$25,000	$1,050,000,000
Construction & Industrial Equipment	2.3	3,300	$155,000	$511,500,000
Small Off-Road Engines	0.3	36,000	$500	$18,000,000
Aircraft, OGV, Freight Locomotives (assumes federal action)**	8.4	--	--	$618,200,000
Total	**20.8**			**$4,356,200,000**

* Note that the total emission reductions under this scenario are not intended to achieve the full emission reductions provided in the State SIP Strategy "Further Deployment of Cleaner Technologies" measures

** Assumes Moyer cost/ton at $30,000/ton + 7 year life. Total funding rounded for discussion purposes

In summary, the funding needed to achieve the NOx emission reductions identified in the State Mobile Source Strategy ranges from $5 billion to as high as $14 billion depending on the types of funding programs implemented and which mobile source sectors will be more cost effective to reduce emissions. The actual funding levels will most likely be on the order of $10 to $12 billion with a mix of different funding programs and technologies.

Funding Needs for Stationary Source Emission Reductions

It is clear that the majority of NOx emissions reductions needed for attainment of the ozone standards will need to come from mobile sources. However, if equally or more cost-effective incentive funding opportunities are identified in the stationary source sector, funding could be diverted to help local stationary sources reduce their emissions. Several stationary source incentive funding approaches have been developed as part of the 2016 AQMP control strategy (ECC-03, CMB-01, CMB-02, etc.). Details on cost-effectiveness and incentive funding needs for each measure are provided in Appendix IV. A total of $1.1 to $1.6 billion of stationary source incentive funding programs are proposed with projected cost-effectiveness levels in the same range as the mobile source incentives described above.

Future Funding Opportunities

Achieving the emissions reductions from 2016 AQMP incentive-based control measures for both mobile and stationary sources will likely require approximately $11 to 14 billion in total funding. Given this significant funding level needed to attain the federal ozone air quality standards over the next seven to fifteen years, an action plan will be developed as part of the AQMP public adoption process to identify the necessary actions by the District, the region, the state, the federal government, and other partnerships to ensure the requisite levels of funding are secured as early as possible and sustained out to 2031.

The District receives around $56 million per year in incentives funding to accelerate turnover of on- and off-road vehicles and equipment under SB 1107, a portion of the State's Tire Fee, and AB 923. AB 923 will sunset in 2024. In addition, the District has received close to $550 million in Proposition 1B funding. The last round of Proposition 1B will be ending in the next couple of years. The District has also received funding under the DERA program on a competitive basis. Regardless, the amount of funding needed to achieve a significant portion of the NOx emission reductions associated with the "Further Deployment" measures proposed in the State SIP Strategy and the 2016 AQMP will require on the order of $1 billion per year if funding is available beginning in 2017. The proposed actions are discussed below.

Actions at the National Level

- **Creation of a National Clean Air Investment and Cleanup Fund** – This action calls for Congress to create a national fund to assist serious or above nonattainment areas attain federal air quality standards. The concept is similar to the "superfund" programs administered by U.S. EPA to help cleanup soil and water contamination. Congress has appropriated on the order of $500 million to $1 billion per year to help fund programs to address water contamination under the Clean Water Act and clean up contaminated sites. However, a similar concept on this scale has not yet been developed for contaminated air. Such a fund could focus on reducing emissions from national and international sources for which state and local jurisdiction is limited.

- **Develop new partnerships with states and regions currently in nonattainment of existing federal air quality standards or may be in nonattainment of future air quality standards** – Regional partnerships such as the West Coast Collaborative and Northeast Diesel Collaborative provide a valuable means of pooling and coordinating funding resources to help neighboring

states and regions focus on reducing emissions from mobile sources that operate across state boundaries.

Establishing new collaboratives on a national level among nonattainment areas can provide an approach to prioritize funding in a more coordinated manner. As an example, deployment of a greater number of Tier 4 locomotives operating in the Basin is critical for the region to meet air quality standards and reduce air toxic exposure to diesel particulate matter exhaust. The same Tier 4 locomotives haul freight to different parts of the U.S. where air quality may or may not be an issue. Current funding for Tier 4 locomotives can be provided only if there is a commitment that the locomotive operates in California. However, under a collaborative approach, funding for Tier 4 locomotive could be provided on a "national" level. The approach is similar to inter-district funding in the Carl Moyer Program.

This proposed action will be coordinated among regional collaboratives through the National Association of Clean Air Agencies (NACAA). NACAA can provide the forum to initiate discussions on the creation of the Clean Air Investment and Cleanup Fund and other regional clean air projects that may benefit the South Coast Air Basin.

Actions at the State Level

- **Prioritize existing funding programs to maximize the co-benefits of criteria pollutant and GHG emission reductions** – California has several large programs to help fund the deployment of cleaner technologies including the Carl Moyer Program, Proposition 1B, Lower Emission School Bus Program, and the GHG Reduction Funds. As the California State Legislature appropriates funds for these programs, there is a need to recognize projects that provide the maximum benefits in reducing both criteria pollutant and GHG emissions without a greater emphasis on one over the other. This actions calls for greater outreach and education to state legislators and their staff on the benefits of funding for projects that achieve the goals of AB 32 and also maximize criteria pollutant emission reductions. A coordinated effort would be made by the District through CAPCOA (California Air Pollution Control Officers Association) and CARB to provide coordinated outreach and education to state lawmakers on the creation of new funding programs while providing information on the benefits of clean air programs.

- **Initiating new funding programs** – Proposition 1B is a valuable funding program in helping cleanup thousands of on-road heavy-duty trucks and off-road goods movement related equipment. Proposition 1B is in its last year of funding. The District along with interested stakeholders will explore the opportunity to develop a new mechanisms similar to Proposition 1B to improve air quality and transportation infrastructure in the goods movement sector.

Actions at the Regional/Local Level

- **Local Ballot Measures** – Efforts are currently underway in bringing measures to the ballot to provide funding for transportation improvement and air quality improvement. Such measures can provide additional funding resources for the region to help attain federal air quality standards.

- **Identify potential new sources of funding opportunities at all levels of government** – This action entails developing new innovative funding programs at all levels of government. The District working with interested stakeholders from the public and private sector will explore potential new funding opportunities. Identified opportunities may require legislative actions to implement. A working group is proposed to be established to develop ideas for new funding programs that will be provided to the District Governing Board for consideration prior to proceeding.

- **Re-invigorate the District's Strategic Alliance Initiative** – In 2002, the SCAQMD Governing Board adopted the Strategic Alliance Initiative. The initiative contains eight specific actions to help the region address air quality issues. The eight actions have been implemented for the most part. However, two of the initiatives: *Initiative #4. Formation of a Multi-Regional Alliance for Clean Air* and *Initiative #7. Strategic Alliance on Clean Fuel Vehicle Funding* have relevance to the 2016 AQMP. This action is to expand upon the efforts back in 2002 to implement the collaborative efforts identified above under "Actions at the National Level".

  Strategic Alliance Initiative #4 called for major metropolitan nonattainment areas, such as Houston, Texas; Atlanta, Georgia; New York City; and Boston, Massachusetts to work together through sharing of information and pooling technical and political resources to address common air pollution problems. This effort included seeking federal funding for the demonstration of advanced clean air strategies that may ultimately prove applicable to other non-attainment areas.

  Strategic Alliance Initiative #7 proposed that the SCAQMD form new alliances with fleet operators, including local governments, to secure long-term funding for implementation of the District's fleet vehicle program. This effort included seeking federal funding opportunities from Congress, the U.S. Department of Energy, and U.S. Department of Transportation, and other funding opportunities at the federal level.

  Under this proposed action, the SCAQMD would expand Initiatives #4 and #7 to develop the partnerships and collaboratives identified under the "Actions at the Federal Level" discussed above.

Responsible Agencies

Implementation of the control strategies requires a cooperative partnership of governmental agencies at the federal, state, regional and local level.

At the federal level, the U.S. EPA and, sometimes other federal agencies, are charged with reducing emissions from federally controlled sources such as aircraft, trains, marine vessels, and other sources.

At the state level, CARB is primarily responsible for reducing emissions from motor vehicles and consumer products.

At the regional level, SCAG assists sub-regional and local governments in playing a formative role in the air quality elements of transportation planning. In addition, local governments serve an important role in developing and implementing the transportation control measures that are included in the 2016 AQMP. SCAG is responsible for providing the socioeconomic forecast (e.g., population and growth forecasts) upon which the Plan is based. SCAG also provides assessments for conformity of regionally significant transportation projects with the overall Plan and is responsible for the adoption of the RTP and the Regional Transportation Improvement Program (RTIP) which include growth assumptions and transportation improvement projects that could have significant air quality impacts, and transportation control measures as required by the CAA.

At the regional level, SCAQMD is responsible for the overall development and implementation of the AQMP. SCAQMD is specifically authorized to reduce the emissions from stationary, point, and some area sources such as coatings and industrial solvents. Emission reductions are also sought through funding programs designed to accelerate vehicle turnover and the purchase of cleaner vehicles. In addition, the SCAQMD has authority to regulate indirect sources under the California Health and Safety Code Sections 40716 (a)(1) and 40440(b)(3). As a means of achieving further emission reductions, the SCAQMD may seek additional authority to regulate sources that have not been completely under the SCAQMD's jurisdiction in the past such as marine vessels, consumer products, and other on-road and off-road sources. The SCAQMD implements its responsibilities with participation from the regulated community and other stakeholders through an extensive rule development and implementation program. This approach maximizes the input of those parties affected by the proposed rule through consultation meetings, public workshops, and ongoing working groups.

Table 4-22 list the responsibilities of the key agencies involved in the implementation of the 2016 AQMP.

TABLE 4-22

Agencies Responsible for Implementation
of the 2016 AQMP for the South Coast Air Basin

AGENCY	PRINCIPAL RESPONSIBILITIES
U.S. EPA	• National mobile vehicle emission standards • Airplanes, trains, and ships • New off-road construction & farm equipment below 175 hp
CARB	• On-road/off-road vehicles (emission standards for in-state sales and in-use fleets as authorized under Section 209(e) of the Clean Air Act) • Motor vehicle fuels • Consumer products
SCAG	• Conformity assessments for Regional Transportation Plan and other transportation projects • Regional Transportation Improvement Program • Transportation Control Measures
Local Government	• Transportation and local government actions (i.e., land use approvals & ports) • Transportation facilities
SCAQMD	• Stationary (e.g., industrial/commercial) and area sources • Indirect sources • Certain mobile sources (e.g., fleet regulations, incentives for accelerated vehicle turnover, reduction in average vehicle ridership, etc.)