

Staff Report

South Coast 8-Hour Ozone SIP Update

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For questions, contact:

Scott King, Ph.D., Air Pollution Specialist
South Coast Air Quality Planning Section
California Air Resources Board
P.O. Box 2815
Sacramento, California 95812

Phone: (916) 324-2831

Email: scott.king@arb.ca.gov

OR

Carol Sutkus, Manager
South Coast Air Quality Planning Section

Phone: (916) 322-1229

Email: carol.sutkus@arb.ca.gov

COMPLETENESS CHECKLIST FOR SIP REVISION

California State Implementation Plan
Revision to South Coast 8-hour Ozone State Implementation Plan
(Ozone SIP Update)

Planning Area: South Coast Air Basin

Title 40 CFR, Part 51, Appendix V Criteria for Determining the Completeness of Plan Submissions	Enclosed	Notes
2.1 ADMINISTRATIVE MATERIALS		
2.1(a) Submittal Letter from Governor's Designee	✓	Letter from Richard W. Corey, CARB Executive Officer, to Mike Stoker, U.S. EPA
2.1(b) Evidence of Adoption	✓	CARB Resolution #19-31
2.1(c) Legal Authority Citation	✓	CARB Resolution #19-31
2.1(d) Copy of: <ul style="list-style-type: none">Emission Inventories	✓	<i>District Contingency Measure Plan, Planning for Attainment of the 1997 80 ppb 8-hour Ozone Standard in the South Coast Air Basin</i>
2.1(e) Evidence of Compliance with State's Procedural Requirements	✓	CARB Resolution #19-31
2.1(f) Evidence of Public Notice Consistent with 40 CFR part 51.102	✓	CARB Notice of public meeting to consider the South Coast 8-hour Ozone Update
2.1(g) Certification of Public Hearing in Accordance with Notice	✓	CARB Resolution #19-31
2.1(h) Compilation of Public Comments and Responses	✓	CARB Public Comment enclosure
2.2 TECHNICAL SUPPORT		
2.2(a) Identification of Regulated Pollutant	✓	<i>District Contingency Measure Plan, Planning for Attainment of the 1997 80 ppb 8-hour Ozone Standard in the South Coast Air Basin</i>
2.2(b) Identification of Attainment Area/Status	✓	<i>District Contingency Measure Plan, Planning for Attainment of the 1997 80 ppb 8-hour Ozone Standard in the South Coast Air Basin</i>
2.2(c) Estimate of Impact on Emissions	✓	<i>District Contingency Measure Plan, Planning for Attainment of the 1997 80 ppb 8-hour Ozone Standard in the South Coast Air Basin</i>

2.2(d) Demonstration that Plan Protects NAAQS	✓	<i>District Contingency Measure Plan, Planning for Attainment of the 1997 80 ppb 8-hour Ozone Standard in the South Coast Air Basin</i>
2.2(e) Modeling Support	N/A	
2.2(h) Compliance/Enforcement	N/A	
2.2(i) Justification	N/A	

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Executive Summary

On June 15, 2004, the South Coast Air Basin (South Coast) was designated nonattainment for the 80 part per billion (ppb) 8-hour ozone national ambient air quality standard (ozone standard), and ultimately classified as an extreme ozone nonattainment area. As an extreme area, the South Coast is required by the Clean Air Act (Act) to develop a State Implementation Plan (SIP) to achieve the ozone standard in 2023, the full ozone season prior to the attainment date of June 15, 2024. California prepared SIPs in 2007, 2012, and 2016 as part of its efforts to implement the ozone standard.

Most recently, the South Coast Air Quality Management District (District) *2016 Air Quality Management Plan* (2016 AQMP) included a SIP demonstrating attainment of the ozone standard in 2023. Air quality modeling in the 2016 AQMP projected that reaching the ozone standard would require significant emissions reductions in oxides of nitrogen (NO_x). The 2016 AQMP ozone attainment strategy for 2023 was based on existing and new District control measures in addition to the California Air Resources Board (CARB) measures from the *2016 State Strategy for the State Implementation Plan* (State SIP Strategy). The State SIP Strategy provides the State's commitment to achieve emissions reductions in the South Coast by 2023 from mobile sources and consumer products.

The Act includes a provision in Section 182(e)(5) specifically for extreme ozone nonattainment areas to rely in part on emissions reductions from measures that anticipate future technologies and control techniques will be developed and deployed in time to provide the emissions reductions needed for attainment. While the 2016 AQMP relied on reductions from existing regulations and defined measures for the majority of the emissions reductions needed to achieve the ozone standard, the last increment of emissions reductions needed for attainment utilized the Section 182(e)(5) advanced technology provision of the Act.

The Act also requires that areas utilizing Section 182(e)(5) measures include a commitment to submit a SIP update three years before the measures are needed. The SIP update must demonstrate that the area will achieve the emissions reductions assigned to the 182(e)(5) provision by the attainment date, or include contingency measures to be implemented if the anticipated technologies do not achieve the planned emissions reductions.

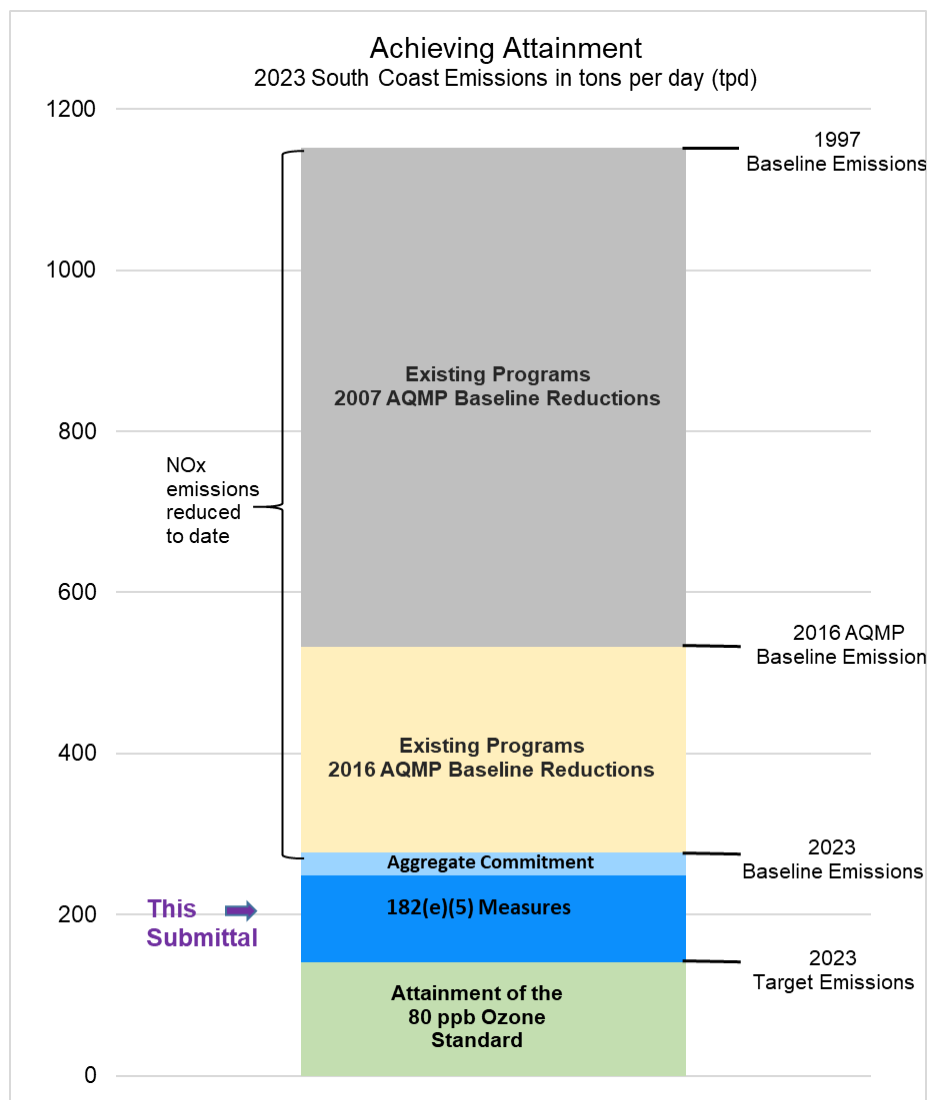
To meet the Section 182(e)(5)(B) requirement, the District and CARB staff developed the *Contingency Measure Plan, Planning for Attainment of the 1997 80 ppb 8-hour Ozone Standard in the South Coast Air Basin* (Ozone SIP Update). The Ozone SIP Update includes a joint CARB/District strategy to

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achieve the remaining NOx emissions reductions needed to achieve the ozone standard in 2023.

Figure ES-1 demonstrates the progress that CARB and the District have made reducing NOx emissions since the ozone standard was set in 1997. Since that time, CARB and District programs have reduced NOx emissions by 76 percent. The area marked “182(e)(5) Measures” is the subject of this SIP submittal and represents the final increment of emissions reductions needed to achieve the ozone standard.

Figure ES-1: NOx emissions in the South Coast since the 8-hour Ozone Standard was set



Ozone SIP Update

The Ozone SIP Update lays out an aggressive approach to achieve the final 108 tons per day (tpd) increment of NO_x reductions needed to achieve the ozone standard. The Ozone SIP Update includes three specific elements. The first two of these elements describe the actions CARB and the District will take to achieve reductions. The last describes anticipated federal actions. Given the challenge, the South Coast cannot meet the ozone standard without timely federal action. Therefore, CARB and the District anticipate federal reductions will occur and so this submittal reflects those anticipated reductions:

1. Identified Emission Reduction Strategies – Since the adoption of the 2016 AQMP, CARB and the District have identified additional emissions reductions that can be credited toward the Section 182(e)(5) reduction commitments in 2023. These reductions are based on adopted regulations and new regulations or programs to be adopted by 2020, clean mobile source technologies being implemented which were not reflected in the 2023 emissions inventory, and a series of innovative new measures designed to achieve further reductions;
2. Additional Incentive Funding – Accelerating the penetration of the cleanest technologies into the current fleet of motor vehicles and other combustion technologies is key to achieving the necessary reductions. Emissions reductions from both existing and new sources of incentive funding are a key element of the plan to achieve the anticipated emissions reductions needed. The Ozone SIP Update sets out an approach for securing additional incentive funding; and
3. Federal sources and federal measures – Without further reductions from sources primarily subject to federal jurisdiction (i.e., ocean-going vessels (OGV), aircraft, locomotives, out-of-state trucks), which account for 36 percent of NO_x emissions in the South Coast, attainment of the ozone standard is not possible by 2023. The Act allocated primary responsibility to control emissions to the states. And CARB and the District have exercised our authority to the fullest to secure emissions reductions with technology-forcing standards for mobile, industrial, and commercial sources. But the Act also recognizes that federal leadership is essential. Section 101(a)(4) of the Act specifies that Congress found that federal financial assistance and leadership is essential for the development of cooperative federal, state, regional, and local programs to prevent and control air pollutions. This is especially true since U.S. EPA retains exclusive authority to regulate some of the most polluting sources in California. Therefore, the Ozone SIP Update outlines the federal actions, which would be needed for the region to achieve the standard by 2023, and which the District and CARB anticipate will occur based on U.S. EPA's authority to control emissions and responsibility to act as a good partner to achieve healthy air.

Ozone SIP Update

Table ES-1 shows the anticipated emissions reductions for the three elements of the Ozone SIP Update.

Table ES-1: Ozone SIP Update Elements

Plan Element	2023 Reductions (tpd)
1. Identified Emissions Reduction Strategies	24-26
2. Additional Incentive Funding	15
3. Federal Measures and/or Funding	67-69
Total	108

How does this submittal enhance the 2016 AQMP?

Implementation of the Act was intended to be a partnership with all levels of government participating. Further, Congress recognized that certain areas, such as the South Coast, face a greater air quality challenge and require a coordinated effort to clean up all source categories to meet air quality standards. States and local air districts can address many source categories, but have limited authority for some source categories. Federal action is needed to fully address these source categories, and reductions from these categories are key to success in meeting the ozone standard in the South Coast.

Since submittal of the 2016 AQMP, CARB and the District have been working hard to adopt the measures committed to in the 2016 AQMP for sources that we have the authority to control. But at the same time, as CARB and the District have done with all prior SIPs, we have continued to identify measures beyond those originally identified in the 2016 AQMP, including already adopted new regulations, to achieve additional emissions reductions. The new measures we have identified through that work that go beyond those in the 2016 AQMP are summarized in Table ES-2 and described in detail in Chapter 2.

Table ES-2: Identified Emission Reduction Strategies

	Agency	NOx Reductions (tpd)
RECLAIM BARCT Rules	South Coast AQMD	2
Ports MOU	South Coast AQMD	3.2-5.2
Airports MOU	South Coast AQMD	0.5
Metrolink Locomotives	South Coast AQMD	3
Incentives (Expected Future Funding)	South Coast AQMD	1.5
Low Carbon Fuel Standard and Alternative Diesel Fuels Regulation	CARB	1.7
ATCM for Portable Engines, Statewide Portable Equipment Registration Program	CARB	0.25
HD Inspection and Maintenance Program	CARB	4.2
Innovative New Measures: <ul style="list-style-type: none"> – Tier 5 Off-Road Diesel Engine Standard – State Green Contracting – Reduction in Growth of Single-Occupancy Vehicle Travel – Locomotive Emission Reduction Measure – VMT and Land Conservation – Regional VMT Reductions – Co-benefits from Electrification of Buildings due to 2017 Climate Change Scoping Plan 	CARB and other agencies	3
Total Reductions Towards 182(e)(5) Commitment*		24-26

* Estimated reductions including 4.2 tpd of NOx reductions associated with updated OGV emissions inventory and CARB's SIP Strategy for OGV.

Emissions reductions from both existing and new sources of incentive funding are a key element of the plan to increase the penetration of the cleanest technologies and achieve the anticipated emissions reductions needed. Moving forward, through 2023, CARB and the District will advocate for several funding sources including: (1) additional Greenhouse Gas Reduction Funds (GGRF), (2) Statewide Bond Funding, and (3) Voting District Authorization for Clean Air Legislation, SB 732 (Allen), as described later. In addition, CARB and the District will continue working hard to explore all additional options to help secure sufficient funding to achieve the ozone standard in 2023.

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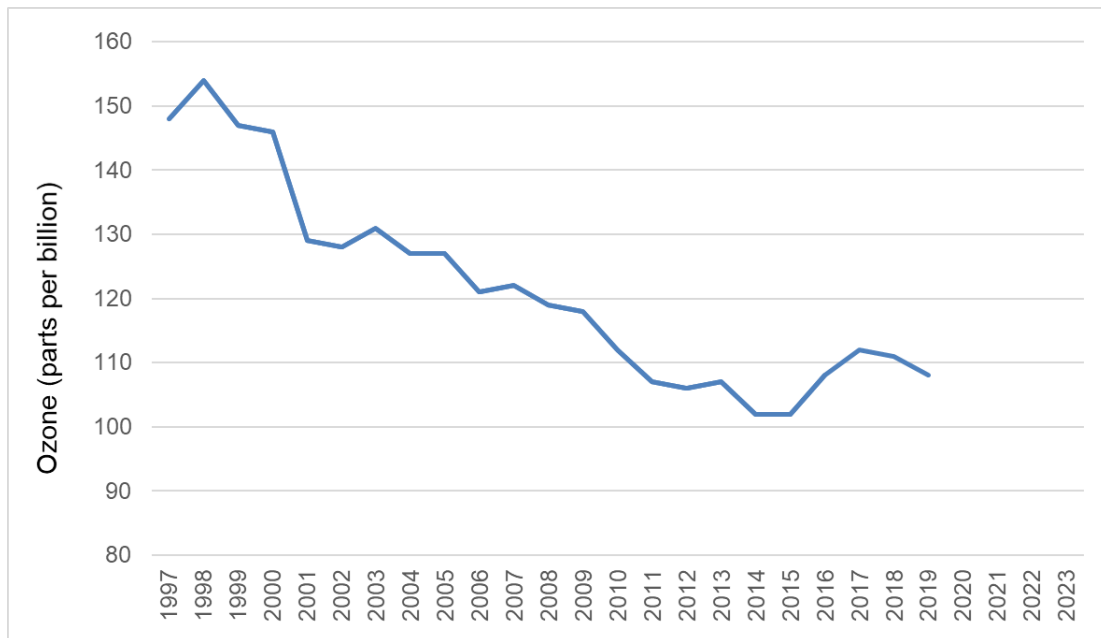
The remaining actions needed to complete the transition to cleaner technologies in all sectors and to achieve the necessary reductions by 2023 can be achieved through efforts at the federal level. To this end, CARB and the District anticipate U.S. EPA will adopt cleaner emissions standards for locomotives and heavy-duty trucks, among other sources under primarily federal control. California understands that U.S. EPA could also choose to achieve reductions by providing incentive funding to accelerate the transition to clean technologies. CARB and the district estimate that up to 78 tpd of reductions in NO_x emissions could be achieved by transitioning sources under federal jurisdiction to the cleanest technologies in a timely manner. California believes that federal actions can produce the emissions reductions needed for attainment in 2023.

Inclusion of assumed reductions from actions by U.S. EPA in this Ozone SIP Update, do not constitute a legally binding requirement by California on U.S. EPA. We understand that as a matter of law that is not permitted. Rather, CARB and the District are making the reasonable assumption that U.S. EPA will fulfill its responsibilities under the Act in such a way and in time to allow California to meet its Act mandates. We note that if, due to federal inaction, we do not achieve the standard by 2023, the Act will require a new SIP setting a new attainment date, up to ten years later. As a contingency for federal inaction, California is already adopting regulations and planning for future regulations that will continue to reduce emissions beyond the current attainment date. We have included an analysis showing the actions CARB and the District anticipate taking in that circumstance.

Chapter 1 - Background

Ozone levels in the South Coast have declined by nearly a third since 1997 when the first 8-hour ozone standard of 80 parts per billion (ppb) (ozone standard) was set by U.S. EPA, Figure 1. While South Coast 8-hour ozone levels in the 1990s often exceeded 200 ppb, the South Coast has not had a monitored 8-hour ozone measurement over 200 ppb since 1998 or even over 150 ppb of ozone since 2003. With the exception of an uptick in ozone levels in recent years most likely due to unusual heat and drought conditions, South Coast was making significant progress towards attaining the ozone standard in 2023.

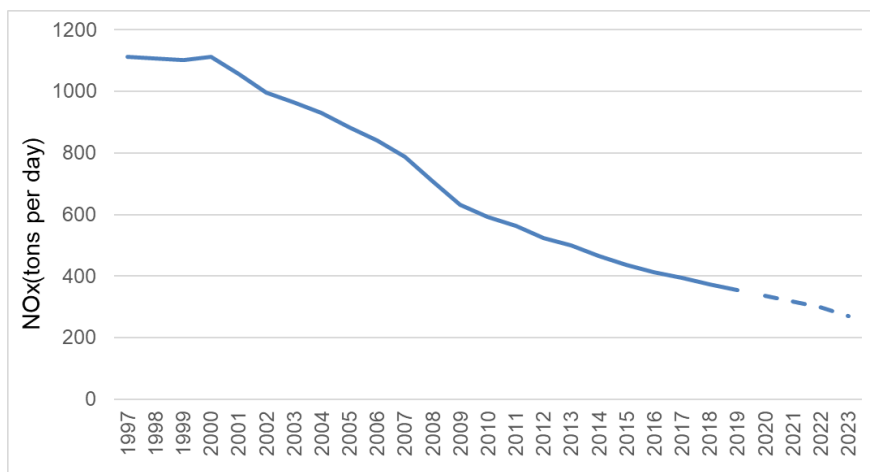
Figure 1: 8-hour Ozone Design Values in the South Coast from 1997 to 2019*



*2019 Ozone measurements are unofficial draft values, subject to change.

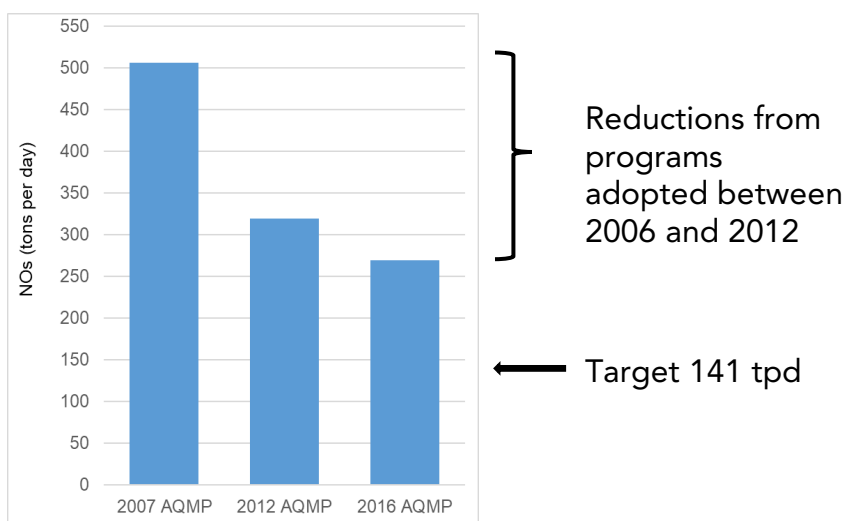
The improvement in air quality in the South Coast has been achieved through State and District programs primarily aimed at reducing NO_x emissions. Total NO_x emissions in the South Coast have decreased from well over 1100 tpd of NO_x in 1997, when the 80 ppb 8-hour ozone standard was set, to 356 tpd today and is projected to be reduced to 269 tpd in 2023, Figure 2.

Figure 2: NO_x emissions in the South Coast from 1997 to 2023



On November 28, 2007, CARB submitted the first SIP for the South Coast to achieve the ozone standard in 2023. The 2007 AQMP, 2012 AQMP, and 2016 AQMP all included emission inventories and detailed the steady progress that has been achieved by the District and the State in securing emissions reductions in NO_x and reactive organic gases (ROG) emissions in 2023 from sources within the South Coast. The 2016 AQMP air quality modeling demonstrated that substantial NO_x emissions reductions are key to reaching attainment. Figure 3 demonstrates how projected 2023 emissions in the South Coast have been reduced from adopted rules and programs (baseline emissions) in successive AQMPs. The 2016 AQMP emission inventory demonstrated that the NO_x baseline emissions in 2023 have been reduced by nearly 50 percent from the 2023 NO_x emissions in the 2007 AQMP, Figure 3.

Figure 3: 2023 baseline emissions in the South Coast from three successive AQMPs over nine years



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Today, NO_x emissions in the South Coast have been reduced by almost 70 percent since U.S. EPA set the ozone standard in 1997. The State has focused its efforts to reduce on-road and off-road mobile source emissions since the majority of the NO_x emissions in the South Coast comes from these sources. In addition to stationary controls, the District's controls in the 2007 AQMP also focused on mobile source reductions.

CARB is implementing numerous regulations aimed at reducing NO_x emissions from light-duty on-road vehicles such as cars, heavy-duty on-road vehicles such as diesel trucks, and off-road sources like forklifts and large construction equipment. Phased implementation of these regulations continue to lower emissions from mobile sources through 2023 and beyond as newer vehicles and engines are introduced with cleaner technologies, and the older, dirtier vehicles and engines are replaced. In addition to regulations targeting vehicles and other combustion sources, CARB is requiring cleaner fuels that provide for additional emissions reductions in vehicles and equipment. Further details of the State's mobile source program are provided in the Ozone SIP Update.

These State programs along with District stationary and area sources programs and incentive programs have reduced NO_x emissions in the South Coast in 2023 to 269 tpd.

2016 AQMP Attainment Demonstration

The 2016 AQMP attainment demonstration specified that NO_x emissions in the South Coast need to be reduced to a level of 141 tpd of NO_x to achieve the ozone standard. As stated above, baseline NO_x emissions in 2023 have been reduced to 269 tpd due to current regulations, leaving an additional 128 tpd of NO_x emissions reductions to be achieved. The 2016 AQMP attainment strategy provides for these emissions reductions through traditional defined measures and measures utilizing Section 182(e)(5) of the Act, titled in the 2016 AQMP as Further Deployment of Cleaner Technologies as shown in Table 1.

Table 1: 2023 NO_x Reductions Needed to Achieve the Ozone Standard

Total Emissions Reductions to Achieve the Ozone Standard	128*
District Defined Measures	23
CARB Defined Measures	4.3
Further Deployment of Cleaner Technologies	108

*additional emissions reductions beyond 128 tpd are required to accommodate a 3 tpd set aside and an additional 4.2 tpd correction in the ocean-going vessel (OGV) emissions

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On March 7, 2017, CARB adopted the State SIP Strategy to provide the emissions reductions needed to achieve the ozone standard in the South Coast. In the State SIP Strategy, CARB committed to providing 113 tpd of NO_x reductions in the South Coast in 2023. These measures were separated into two types of commitments: defined measures that comprise an aggregate commitment and 108 tpd of NO_x emissions reductions from further deployment of new technologies measures approved under Section 182(e)(5) of the Act.

Since adopting the State SIP Strategy, CARB has been hard at work implementing the measures that were defined in the State SIP Strategy according to the schedule set forth in the aggregate commitment. Several of these measures have been adopted by CARB and are detailed in Table 2. Other measures are in the development stage, either undergoing public workshops or staff concept development.

Table 2: 2016 State SIP Strategy Approved Aggregate Commitment Measures

Measure Title	Board Adoption
South Coast On-Road Heavy Duty Vehicle Incentive Measure	March 22, 2018
Heavy-Duty Diesel Vehicle Emission Control System Warranty Regulation Amendments	June 28, 2018
Innovative Clean Transit Regulation	December 14, 2018
Zero-Emission Airport Shuttle Regulation	June 27, 2019
Zero-Emission Powertrain Certification Regulation	June 27, 2019
Electric Vehicle Supply Equipment Standards	June 27, 2019
Ocean-Going Vessel At Berth And At Anchor Regulation	Scheduled December, 2019

The further deployment of cleaner technology measures represent the remainder of the emissions reductions needed, 108 tpd of NO_x. These measures include incentive programs to accelerate technology penetration in time to achieve the ozone standard and further federal actions to achieve emissions reductions from sources under federal and international regulatory authority.

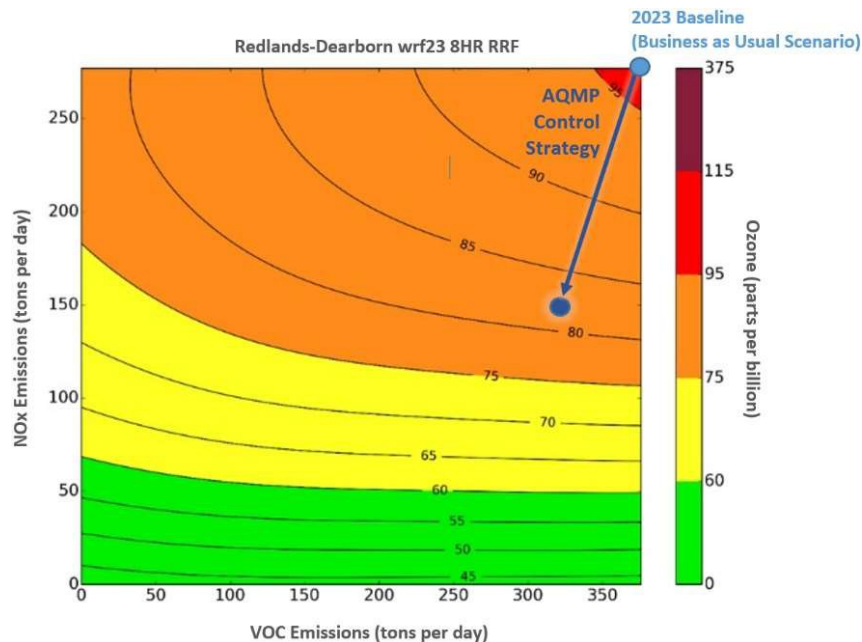
In addition to committing to 113 tpd of NO_x reductions in the 2023 ozone attainment strategy, reductions in ROG emissions were also included in the attainment demonstration as concurrent benefits from the State SIP Strategy measures. While these emissions reductions were included in the attainment demonstration in the 2016 AQMP, ROG reductions have limited effect on reducing 8-hour ozone levels in 2023 as determined by the air quality modeling and shown by the shape of the curve in Figure 4. Figure 4 demonstrates the

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relationship between the ozone precursors, NO_x and ROG emissions and ozone levels, and demonstrates that reductions in NO_x emissions are significantly more beneficial to reducing ozone levels in 2023 than are reductions in ROG emissions.

The Ozone SIP Update is required to address the NO_x and ROG emissions in 2023 from further deployment of cleaner technology measures. As discussed above, reductions from measures targeting ROG emissions in 2023 will produce only a minor benefit to meeting the ozone standard. For this reason, the Ozone SIP Update focuses on NO_x emissions reductions to provide for attainment of the ozone standard.

Figure 4: 2023 Isopleth of Redlands monitor in 2023 demonstrating NO_x sensitivity



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Chapter 2- Contingency Measure Plan

Achieving the ozone standard in the South Coast by 2023 is a tremendous challenge. The State SIP Strategy demonstrated that reducing NO_x emissions in the South Coast will require significant deployment of near-zero and zero-emission technologies including substantial levels of incentive funding needed to accelerate the turnover to these cleaner technologies. While CARB and the District continue to implement on-going and new control programs for the sources under California's control, U.S. EPA action is critical to reduce the NO_x emissions from federal and international sources to the level necessary to achieve the ozone standard in 2023.

The proposed contingency measure plan discussed in the Ozone SIP Update and outlined in this report lays out an aggressive approach for achieving the 108 tons per day of NO_x reductions allocated to "Further Deployment of Cleaner Technologies" under Section 182(e)(5) of the Act. The contingency management plan is comprised of three specific elements, as described below:

1. Identified Emission Reduction Strategies – Since the adoption of the 2016 AQMP, CARB and the District have identified additional emissions reductions that can be credited toward the Section 182(e)(5) reduction commitments in 2023. These reductions are based on adopted regulations and new regulations or programs to be adopted by 2020, clean mobile source technologies being implemented which were not reflected in the 2023 emissions inventory, and a series of innovative new measures designed to achieve further reductions;
2. Additional Incentive Funding – Accelerating the penetration of the cleanest technologies into the current fleet of motor vehicles and other combustion technologies is key to achieving the necessary reductions. Emissions reductions from both existing and new sources of incentive funding are a key element of the plan to achieve the anticipated emissions reductions needed. The Ozone SIP Update sets out an approach for securing additional incentive funding; and
3. Federal sources and federal measures – Without further reductions from sources primarily subject to federal jurisdiction (i.e., OGV, aircraft, locomotives, out-of-state trucks), which account for 36 percent of NO_x emissions in the South Coast, attainment of the ozone standard is not possible by 2023. The Act allocated primary responsibility to control emissions to the states. And CARB and the District have exercised our authority to the fullest to secure emissions reductions with technology-forcing standards for mobile, industrial, and commercial sources. But the Act also recognizes that federal leadership is essential. Section 101(a)(4) of the Act specifies that Congress found that federal financial

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assistance and leadership is essential for the development of cooperative federal, state, regional, and local programs to prevent and control air pollutions. This is especially true since U.S. EPA retains exclusive authority to regulate some of the most polluting sources in California. Therefore, the Ozone SIP Update outlines the federal actions, which would be needed for the region to achieve the standard by 2023, and which the District and CARB anticipate will occur based on U.S. EPA's authority to control emissions and responsibility to act as a good partner to achieve healthy air.

Table 3 presents the anticipated emissions reductions for the contingency measure plan that is included in the Ozone SIP Update.

Table 3: Ozone SIP Update Contingency Measure Plan Elements

Plan Elements	2023 Reductions (tpd)
1. Identified Emissions Reduction Strategies	24-26
2. Additional Incentive Funding	15
3. Federal Measures and/or Funding	67-69
Total	108

Further detail for these three elements is provided below.

1) Identified Emissions Reduction Strategies

In addition to implementing the measures specified in the 2016 AQMP, CARB and District staffs have identified additional emissions reduction strategies needed to reach attainment. Table 4 lists the resulting newly identified strategies and the anticipated emissions reductions. These efforts have been, or will soon be, adopted. Reductions from these measures were not included in the 2023 ozone standard attainment demonstration in the 2016 AQMP. Altogether, these will provide up to 26 tpd of NO_x reductions in 2023 with the District actions accounting for 10 to 12 tpd. Further detail on the strategies are provided below.

Table 4: Identified Emission Reduction Strategies

	Agency	NO _x Reductions (tpd)
RECLAIM BARCT Rules	District	2
Ports MOU	District	3.2-5.2
Airports MOU	District	0.5
Metrolink Locomotives	District	3
Incentives (Expected Future Funding)	District	1.5
Low Carbon Fuel Standard and Alternative Diesel Fuels Regulation	CARB	1.7
ATCM for Portable Engines, Statewide Portable Equipment Registration Program	CARB	0.25
HD Inspection and Maintenance Program	CARB	4.2
Innovative New Measures	CARB	3
Total Reductions Towards 182(e)(5) Commitment*		24-26

* Estimated reductions including 4.2 tpd of NO_x reductions associated with updated OGV emissions inventory and CARB's SIP Strategy for OGV.

District Identified Emission Reduction Strategy

RECLAIM BARCT Rules

Pursuant to directives listed in control measure CMB-05 of the 2016 AQMP and in recently adopted State statute (AB 617), the REgional CLean Air Incentives Market (RECLAIM) Program facilities are subject to an expedited implementation schedule to install additional best available retrofit control technology (BARCT) no later than December 31, 2023, which has accelerated the implementation schedule of CMB-05 from 2025 to 2023. In 2020, the District is scheduled to adopt rules implementing CMB-05 including Rule 1109.1 for refinery equipment, Rule 1150.3 for landfills and Rule 1179.1 for combustion equipment and publicly owned treatment work facilities.

Ports and Airports MOUs

On May 4, 2018, the District's Governing Board directed staff to pursue a voluntary Memorandum of Understanding (MOU) approach with marine ports and commercial airports and pursue regulatory approaches for warehouses/distribution centers, railyards and new and re-development. The MOUs with the marine ports and commercial airports will implement the

facility-based mobile source measures MOB-01 and MOB-04 in the 2016 AQMP, with quantifiable emissions reductions. Reductions from these measures were not included in the 2016 AQMP ozone attainment demonstration.

Metrolink Locomotives

The District's Governing Board has awarded Metrolink a total of \$101.85 million since February 2013 for the replacement of 37 older locomotives (Tier 0 and Tier 2) with Tier 4 locomotives and the new purchase of three Tier 4 locomotives. As of September 2019, 27 Tier 4 locomotives have been delivered to Metrolink with 23 units deployed in revenue service or undergoing testing to prepare for service. Metrolink anticipates all 40 Tier 4 locomotives will be deployed in service by the end of 2020.

Incentives (Expected Future Funding)

Additional NO_x emissions reductions are anticipated from continued implementation of existing incentive programs with future funding also generating surplus reductions to the 2016 AQMP's 2023 commitments.

CARB Identified Emission Reduction Strategies – New Mobile Source Measures

Low Carbon Fuels Standard Amendment

On September 27, 2018, the Board approved amendments to the Low Carbon Fuel Standard (LCFS), which sets annual carbon intensity standards for gasoline, diesel, and the fuels that replace them consistent with California's 2030 GHG target enacted through SB32. The LCFS will lower GHGs and improve California's air quality by lowering statewide NO_x and PM_{2.5} emissions from 2019 through 2030.

ATCM for Diesel Particulate Matter from Portable Engines Rated At 50 Horsepower and Greater, and the Statewide Portable Equipment Registration Program Regulation

On November 16, 2017, CARB approved amendments to the Portable Equipment ATCM and Portable Equipment Registration Program (PERP Regulation). The PERP Regulation requires operators to upgrade their equipment to meet emissions requirements by 2020. The latest PERP Regulation restructures the emissions requirements so that implementation and enforcement of the regulation is feasible and achieves NO_x emissions reductions not anticipated in the 2016 AQMP.

Heavy Duty Truck Inspection and Maintenance Program

Scheduled for consideration by CARB in 2020, the Heavy-Duty Truck Inspection and Maintenance Program (HD I/M program) will incentivize vehicle owner and driver behavior to ensure that heavy-duty vehicles are well maintained and properly repaired. The HD I/M program will ensure that vehicles' emissions control systems are operating as designed to reduce emissions, and will also remove gross polluting HD vehicles from the roads.

CARB Identified Emission Reduction Strategies – Innovative New Measures

In addition to the regulations identified above, CARB has identified additional innovative new measures. The innovative new measures represents the next step to achieving more reductions at the State level and go beyond those regulations identified above. These actions, in some cases, go beyond the historical model of programs and regulations and represent the level of transformation needed from every sector to achieve clean air. These measures are listed in Table 5 and further detailed is provided below.

The Innovative New Measures represent a new SIP commitment by the Board.

Table 5: CARB Innovative New Measures

Innovative New Measures	Reductions
Tier 5 Off-Road Diesel Engine Standard	3.0
State Green Contracting	
Reduction in Growth of Single-Occupancy Vehicle Travel	
Locomotive Emission Reduction Measure	
Regional VMT Reductions	
VMT and Land Conservation	
Co-benefits from Electrification of Buildings due to 2017 Climate Change Scoping Plan	

Tier 5 Off-Road Diesel Engine Standard

Since 1995, CARB has adopted four increasingly stringent tiers of engine standards to reduce emissions and adverse health effects from off-road diesel engines. However, it has been almost 14 years since the off-road diesel emissions standards were last updated (Tier 4 in 2005), which now lag behind the European Stage V nonroad diesel standards in stringency. As a result, the emissions contribution from off-road diesel engines continues to increase and will exceed the contribution from on-road diesel engines by 2025, making off-road diesel the single largest source of mobile NOx emissions in California. This measure would include adopting more-stringent engine standards that reduce NOx and PM emissions by up to 90 percent below the current Tier 4

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engine standards, as well as potential requirements to offer off-road vehicles with zero-emission technology for sale.

State Green Contracting

California's State Transportation Agency (i.e. Caltrans) spends approximately \$5 billion annually on building and maintaining California roads. In addition, State government purchases new vehicles and equipment each year. This measure would consider requiring that contractors use the cleanest equipment available in order to be considered for these government contracts and that State agencies purchase the cleanest vehicles and equipment that are available. This measure builds on Governor Newsom's recent directive for State government to immediately redouble efforts to reduce greenhouse gas emissions and mitigate the impacts of climate change while building a sustainable, inclusive economy.

Reduction in Growth of Single-Occupancy Vehicle Travel

This measure would consider applying a regional transportation system pricing program in conjunction with requirements to use funding generated to encourage people to take public transit, carpool, bike, walk, and/or adjust trip times at congested times of day. The regional pricing program would implement a suite of regional and locally focused pricing strategies for use of certain lanes, driving into certain areas, parking in prime locations, driving at peak times, and/or utilizing non-pooled ride hailing services. Funds generated from the program must be used to either encourage use of existing identified clean transportation options or to provide additional clean transportation options. Some examples include, but are not limited to: reducing the cost of transit via transit passes, providing rebates for e-bikes, providing lower cost or reserved parking spaces for carpools, educating the public about the availability of per-mile car insurance pricing options, and provide traveler incentives to encourage travel at times when roads are less congested.

Locomotive Emission Reduction Measure

CARB is evaluating concepts for a potential regulation to reduce criteria, toxics, and greenhouse gas emissions from locomotives. These concepts address in-use locomotive emissions, idling, and maintenance activities. The potential regulation includes elements that could be implemented at the State and/or District level. Previously, State action to limit rail emissions has been through enforceable agreements. Although a regulation will take more time to implement than an agreement, it will not sunset like previous MOUs, it will be more transparent in its development, it will be enforceable, and it will achieve additional emissions reductions.

Specifically, one of CARB's concepts, called the Locomotive Emissions Reduction Spending Account (Account) requires that the Class 1 railroads set aside funds each year to purchase Tier 4 or cleaner locomotives. The amount to be set aside is based on the usage of Tier 3 and lower (dirtier) locomotives in California. The charge increases with the emissions level of the locomotive used, which should encourage cleaner locomotive operation within the State. The Account could begin implementation by the end of 2022, with potential PM and NOx reductions by the end of 2023. CARB staff will coordinate with the District to ensure this measure does not duplicate the District's railyard indirect source rule.

VMT and Land Conservation

Integrating land and transportation strategies can have synergistic effects and help the state further reduce both criteria and greenhouse gas emissions by protecting land-based carbon while providing simultaneous reductions in emissions from transportation. Protection of lands that are at risk of conversion to urban or rural development through use of conservation easements or the implementation of local and regional planning policies that protect land from development result in the extinguishment of development rights, thereby avoiding increases in vehicle miles traveled (VMT) by limiting opportunities for expansive, vehicle-dependent forms of development. Currently, only some sustainable community strategies in regional transportation plans explicitly include conservation and management of natural and working lands. While cities and counties across California have developed local and county climate action plans to reduce GHG emissions and increase climate resilience, few capture the potential GHG reductions from conserving, restoring, and managing natural working lands. Although limited research is available on the direct effect of land conservation on VMT, the State is expanding efforts to understand the relationship and synergies of taking an integrated cross-sector approach.

Regional VMT Reductions

Today's California is shaped by historic patterns of growth in transportation and housing. While we have grown to be the fifth largest economy in the world, our residents, in search of an affordable place to live, and with insufficient transportation options, are too often left with little choice but to spend significant time and money driving from place to place. Where we put transportation and housing also imposes and often reinforces long-standing racial and economic injustices by placing a disproportionate burden on low-income residents, who end up paying the highest proportion of their wages for housing and commuting. Staff and elected officials of local, sub-regional, regional, and State government bodies all have critical authorities and roles to contribute and could take steps to improve these outcomes, but so far, all –

acting rationally within the State's current structure of incentives, political forces, and policy restrictions – have not been able to enact the magnitude of change needed. There are unique opportunities for elected officials to improve mobility options within the transportation sector to reduce emissions and help with attainment of health-based air quality standards in the South Coast.

Co-Benefits from Electrification of Buildings due to 2017 Climate Change Scoping Plan

Buildings contribute directly to emissions when fuel (primarily natural gas) is combusted on-site for space and water heating. As grid electricity in California transitions to 100 percent clean energy, building electrification can reduce fuel combustion emissions in buildings. The framework for this measure is contained in Alternative 1 of the 2017 Climate Change Scoping Plan adopted by the CARB Board in 2017, and includes measures pertaining to appliance technology substitution; demand reduction; and electrical efficiency in industry, agriculture, residential, and commercial lighting; and residential air conditioning, freezing, and refrigeration. An implementation framework for building electrification would consider mechanisms to require and incentivize early retirement/replacement and new installations of residential and commercial water heating, space heating, and air conditioning appliances with zero or near-zero emission technologies such as high efficiency electric heat pumps.

2) Additional Incentive Funding

The 2016 AQMP demonstrated that attainment of the ozone standard in 2023 would require over \$1 billion per year in incentive funding for clean vehicles through 2023. This represents a substantial increase in funding beyond traditional incentive programs, and new incentive programs are being developed to provide the needed funding.

Recent programs that will provide continued incentive funding include AB 1274 (O'Donnell) that creates annual smog abatement fees that are transferred to the Carl Moyer Program. This bill is anticipated to create a sustainable funding source of about \$25-30 million annually for the South Coast.

Moving forward, through 2023, CARB and the District will advocate for several funding sources including: (1) additional Greenhouse Gas Reduction Funds (GGRF), (2) Statewide Bond Funding, and (3) Voting District Authorization for Clean Air Legislation, SB 732 (Allen), as described below. In addition, CARB and the District will continue working hard to explore all additional options to help secure sufficient funding to achieve the ozone standard in 2023.

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1. GGRF - Given that the South Coast already has three approved communities in the AB 617 program and is likely to add 2 more in 2020, the District will be advocating for at least \$150 to \$200 million in sustainable annual GGRF monies for incentive funding going forward, to benefit disadvantaged communities within the South Coast that are in the AB 617 program or are being considered for that program in future years.
2. Statewide Bond Funding – Currently, there are multiple pieces of State legislation that would result in bond measures for the statewide ballot (e.g. AB 352 (E. Garcia); AB 1298 (Mullin); and SB 45 (Allen)), that include funding at around the \$4 billion level, for purposes that include the funding of zero and near-zero emission vehicle technologies and infrastructure. These bills are expected to be consolidated into one primary bond bill in 2020 and represent a substantial potential source of incentive funding to benefit air quality within the South Coast. District staff will be working with the California Air Pollution Control Officers Association to secure a portion of these bond monies for incentive funding for local air districts, including in the South Coast, to reduce air pollution and facilitate attainment of federal air quality standards.
3. Voting District Authorization for Clean Air Legislation, SB 732 (Allen) – The District is currently sponsoring State legislation, SB 732 (Allen), which seeks authorization from the Legislature to create a voting district in the South Coast to allow local funding measures to be placed on the ballot. The bill allows the people of the South Coast to decide for themselves whether they want to invest in clean air and address climate change. Once the bill passes the State legislature and is signed into law, it would allow a sales tax measure to be put on a ballot within the South Coast, either by voter initiative or by District Board action.

This bill could result in the South Coast receiving a sustainable source of funding (estimated \$1.4 billion dollars per year) to be used primarily for incentive funding for clean vehicles, infrastructure and equipment to facilitate implementation of the 2016 AQMP and future AQMPs within the South Coast.

3) Reductions from Federal Sources

Despite the many actions being taken by the District and CARB, the contribution of emissions from interstate sources coupled with limitations on regulatory authority over large and growing emissions from several off-road sources mean that achieving emissions reductions necessary to achieve federal standards will also require strong action at the federal level. CARB and the District continue to work with federal and international agencies to advocate for

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more stringent emission standards for sources that are not under State and local regulatory purview, but federal action is still forthcoming.

Emissions from sources subject to federal jurisdiction and international sources are either increasing or not keeping pace with reductions in other sectors in the South Coast. The following actions regarding sources under federal and international control are needed to usher in the cleanest technology and reduce emissions from these sources. These measures represent the transition to cleaner technologies that is needed in all sectors to achieve the goals set forth in this document and to achieve air quality standards in the future. The estimated emissions reductions in Table 6 from these measures represent complete transitions of these fleets and the maximum potential reductions from these sources. Thus, the measures may achieve more reductions than necessary to meet the standard if every single measure were implemented to the maximum extent. California understands that U.S. EPA could also choose to achieve reductions by providing incentive funding to accelerate the transition to clean technologies. At a minimum, some combination of these federal measures are necessary, through regulations, incentives or other means, for California to achieve the final increment of emissions reductions needed to meet the ozone standard, Table 6.

Table 6: Reductions from Federal and International Sources

Measures	Measure Description	2023 NOx Reductions (tpd)
Low-NOx Heavy-Duty Vehicles	Heavy-duty vehicles (above 14,000 lbs. GVWR) powered by low-NOx standard in 2023	Up to 35
Low-NOx Ocean-Going Vessels	Ocean-going vessels coming to California powered by Tier 3 engines in 2023	Up to 28
Low-NOx Locomotives	Locomotives coming to California powered by Tier 4 engines in 2023	Up to 11
Low-NOx Aircraft	Aircraft NOx reduced 20% from 2012 levels	Up to 4
Total Reductions		Up to 78

The Ozone SIP Update will produce emissions reductions sufficient to achieve the 108 tpd of NOx reductions allocated to “Further Deployment of Cleaner Technologies” measures approved under Section 182(e)(5) of the Act.

Environmental Impacts

The District, as Lead Agency under the California Environmental Quality Act (CEQA), has reviewed the project pursuant to CEQA and the CEQA Guidelines. Pursuant to CEQA Guidelines section 15168, the District determined that the proposed Ozone SIP Update is considered a later activity within the scope of the programmatic project covered by the March 2017 Final Program Environmental Impact Report (PEIR) for the 2016 AQMP. It made this determination because no substantial changes or revisions to the project are necessary and no new significant environmental effects and no substantial increase in the severity of previously identified significant effects will occur as result of this later activity. As such, in accordance with CEQA Guidelines Section 15168(e)(2), the District found that the March 2017 Final PEIR for the 2016 AQMP adequately describes and analyzes the environmental effects of the project for the purposes of CEQA. Thus, the District found that no new environmental document is required pursuant to CEQA Guidelines Section 15168(c) and no subsequent CEQA document is required pursuant to CEQA Guidelines Section 15162.

To bolster its determination, the District found that the District adequately adopted mitigation measures in the March 2017 Final PEIR and made those measures a condition of approval of the 2016 AQMP. The District required and adopted an adequate Mitigation, Monitoring, and Reporting Plan, pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097, for the 2016 AQMP. Given the existing, adequate mitigation measures, the District found that it was not necessary to impose new or modified mitigation measures as a condition of the approval of this later activity, the proposed Ozone SIP Update. Further, the mitigation measures that were made a condition of approval of the 2016 AQMP as analyzed in the March 2017 Final PEIR and the corresponding Mitigation, Monitoring, and Reporting Plan that was adopted at that time will remain in effect through the life of the proposed project under consideration. In addition, Findings pursuant to CEQA Guidelines Section 15091 and a Statement of Overriding Considerations pursuant to CEQA Guidelines Section 15093 which were required and adopted for the 2016 AQMP, will remain in effect and applicable to the proposed project.

Since the District is the lead agency under CEQA, CARB acts as a responsible agency when it considers approving the proposed project. (CEQA Guidelines § 15096.) CEQA Guidelines, section 15096 dictates the responsible agency's role when reviewing a project that has been approved by a lead agency. Specifically, CARB must consider the environmental effects of the project as shown in the District's March 2017 Final PEIR prior to reaching a decision on the project. Under section 15096 of the CEQA Guidelines, if CARB finds that there are aspects of the EIR that do not adequately analyze the components of the Proposed Project that are within its authority to carry out, like the CARB

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measures, then CARB “shall not approve the project as proposed if the agency finds any feasible alternative or feasible mitigation measures within its powers that would substantially lessen or avoid any significant effect the project would have on the environment.”

After considering the March 2017 Final PEIR, there does not appear to be any additional alternatives or feasible mitigation measures within CARB’s powers that would substantially lessen or avoid any significant effects that those parts of the project which it carries out would have on the environment. Specifically, the District’s mitigation measures that it included in its March 2017 Final PEIR, identified in table 1.9-1, and the findings supporting its statement of overriding considerations adequately address impacts associated with CARB’s measures in the proposed project. Many of the significant and unavoidable impacts triggering the statement of overriding considerations are not mitigable because the power to mitigate the impacts lies with other jurisdictions, not CARB or the District. Therefore, upon CARB’s consideration of the March 2017 Final PEIR, as expressed in the associated resolution for this Board item, its approval of the proposed project would comply with its responsible agency requirements under CEQA Guidelines section 15096.

Chapter 3 – Conclusion and Recommendations

Conclusion

The Ozone SIP Update satisfies the requirements of Section 182(e)(5) of the Act, and articulates the joint strategy by the District and CARB for achieving the 108 tons per day of NO_x reductions allocated to Section 182(e)(5) measures in the 2016 AQMP. The Ozone SIP Update calls for newly identified emission reduction strategies and innovative new measures; additional incentive funding to transition to the cleanest available technologies; and significant federal action and/or funding to achieve the required reductions from sources under federal responsibility. These reductions will achieve attainment of the ozone standard in 2023.

Staff Recommendations

The Ozone SIP Update satisfies the requirements of Section 182(e)(5) of the Act. CARB staff recommends that the Board adopt the Ozone SIP Update including the new commitment to develop the proposed Innovative New Measures, and direct the Executive Officer to submit it to U.S. EPA as a revision to the California SIP.

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1001 I Street
P.O. Box 2815
Sacramento, CA 95812
www.arb.ca.gov